SITE HEALTH AND SAFETY PLAN (*HASP*)

Office:	VHI
Site Name:	M&H Zinc Site
Client:	U.S. EPA
Work Location:	LaSalle, Illinois
WO#:	20405.012.008.0097.00

SITE HEALTH AND SAFETY PLAN (HASP)

Prepared by: Ben Maradkel	W.O. Number: 20405.012.008.0097.00	Date: 11/27/06

Project Identification

Office: Vernon Hills, IL (VHI)
MW Division
Site Name: M&H Zinc Site (Residential Sampling and XRF Screening)
Client: U.S. EPA
Work Location Address: The entirety of the M&H Site occupies approximately 160 acres located in the City of La Salle, Illinois

Site History: During the 1993 IEPA Assessment, several soil samples collected from nearby residential properties were found to contain elevated levels of metals associated with the site. This contamination is a potential threat to the nearly 10,000 people living within a one mile radius of the site. The M&H Site was listed on the National Priorities List (NPL) on September 29, 2003.

Scope of Work: During the week of Dec 11, 2006 , U.S. EPA's FIELDS team will initiate shallow soil samples (0"-12") from approximately 140 residential yards near the Site. WESTON START will be directed by U.S. EPA personnel and will primarily be conducting doc., sample prep and shipment activities, but WESTON may assist the FIELDS personnel with the preparation of all soil samples (i.e. drying, sieving, grinding) and screening with a portable X-Ray Fluorescence (XRF) analyzer. U.S. EPA's FIELDS team will also GPS all sample locations and use U.S. EPA's Rapid Assessment Tools (RAT) program to record metal values in the field. WESTON START will also assist U.S. EPA to collect soil samples.

Regulatory Status:

Site regulatory status:

CERCLA/SARA	RCRA	Other Federal Agency
☒ U.S. EPA	☐ U.S. EPA	☐ DOE
☐ State	☐ State	☐ USACE
☒ NPL Site	NRC	☐ Air Force
☒ OSHA	☐ 10 CFR 20	☐ _____

Hazard Communication (Req'd See Attachment D)
☒ 1910 ☐ 1926 ☐ State

Safety Officer Manual (Required to be On-Site)
Based on the Hazard Assessment and Regulatory Status, determine the Standard HASP(s) applicable to this project. Indicate below which Standard HASP will be used and append the appropriate pages of this form along with the Standard Plan.

☐ Stack Test	☐ _____
☐ Air Emissions	☐ _____
☐ Asbestos	☐ _____
☐ Industrial Hygiene	☐ _____
☐ _____	☐ _____

Review and Approval Documentation:

Reviewed by:
SO/DSM/CHS — Tonya Balla — Date: 11/30/06
Name (Print): Tonya Balla — Signature

Other — Date: _____
Name (Print) — Signature

Approved by:
Project Manager — Omprakash Patel — Date: 11/30/06
Name (Print): Omprakash Patel — Signature

Hazard Assessment and Equipment Selection:

In accordance with WESTON's Personal Protective Equipment Program and 29 CFR 1910.132, at the site prior to personnel beginning work, the SHSC and/or the Site Manager have evaluated conditions and verified that the personal protective equipment selection outlined within this HASP is appropriate for the hazards known or expected to exist. (Refer to Safety Officer Manual Section 2, Personal Protection Program, for guidance.)

☒ **FSO**

☒ Site Manager — Shamille Lewis — Date: _____
Name — Signature

☒ **Environmental Compliance Officer**
☒ **Dangerous Goods Shipping Coordinator**
Name — Signature

Project start date: 12/11/06 End date: 12/22/06	This site HASP **must** be **reissued/reapproved** for any activities conducted after: 06/30/07	Amendment date(s) 1. 2.	By:

Vehicle Use Assessment and Selection
Driving is one of the most hazardous and frequent activities for WESTON Employees. The most appropriate type vehicle(s) authorized for use on this project is/are: 1. Jeep/Trailblazer (or similar SUV) – WESTON or rental vehicle 2. 3. 4.
The following Project Team Member's qualifications and experience in driving these types of vehicles was evaluated and found to be acceptable (indicate vehicle type(s) number next to employee name). 1. Shamille Lewis 2. Jay Rauh 3. 4. 5. 6. 7. 8. 9. 10.
The project site was evaluated and a **Traffic Control Plan** ☐ is required ☒ is not required. If required, the **Traffic Control Plan** can be found in Attachment H.

Section Page

1. PERSONNEL ON SITE INFORMATION

1.1 WESTON REPRESENTATIVES

Organization/Branch	Name/Title	Address	Telephone
MW/VHI	O. Patel Project Manager	750 E. Bunker Court Suite 500 Vernon Hills, Illinois 60061	(847) 918- 4051
MW/VHI	Shamille Lewis Associate Project Scientist	Detroit, MI	313/ 739-2500
MW/ CHI	Jay Rauh Associate Project Scientist	Chicago, IL	312/ 424-3300

Roles and Responsibilities: O. Patel is the Project Manager and the Task Manager for this job. The SHSC and primary field manager is Shamille Lewis and Jay Rauh is an alternate field manager and SHSC. The SHSC will assure that activities are being performed safely. Shamille Lewis will be assisting U.S. EPA FIELDS personnel with primarily documentation and sample preparation and shipment, but FIELDS personnel may need assistance with surface soil sampling and XRF screening at the site.

1.2 WESTON SUBCONTRACTORS

Organization/Branch	Name/Title	Address	Telephone
None			

Roles and Responsibilities:

SITE-SPECIFIC HEALTH AND SAFETY PERSONNEL

The Site Field Safety Officer (FSO) for activities to be conducted at this site is: Shamille Lewis

The FSO has total responsibility for ensuring that the provisions of this Site HASP are adequate and implemented in the field.

Changing field conditions may require decisions to be made concerning adequate protection programs. Therefore, the personnel assigned as FSOs are experienced and meet the additional training requirements specified by OSHA in 29 CFR 1910.120.

Qualifications:

Shamille Lewis is current on all required certifications including first aid, CPR, 40-hour/refresher, medical, SHSC, and dangerous goods shipping.

Designated alternates include: Jay Rauh is tentiavely listed as an alternative.

1.3 SITE PERSONNEL AND CERTIFICATION STATUS

1.3.1 Weston Employee Certification

Name: Shamille Lewis **Title:** Associate Project Scientist **Task(s):** All **Certification Level or Description:** D ☒ Medical Current ☒ Training Current ☒ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)	**Name:** Jay Rauh **Title:** Associate Project Scientist **Task(s):** All **Certification Level or Description:** D ☒ Medical Current ☒ Training Current ☒ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)
Name: **Title:** **Task(s):** **Certification Level or Description:** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)	**Name:** **Title:** **Task(s):** **Certification Level or Description:** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)
Name: **Title:** **Task(s):** **Certification Level or Description:** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)	**Name:** **Title:** **Task(s):** **Certification Level or Description:** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)
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TRAINING CURRENT - Training: All personnel, including visitors, entering the exclusion or contamination reduction zones must have certifications of completion of training in accordance with OSHA 29 CFR 1910, 29 CFR 1926, or 29 CFR 1910.120.

FIT TEST CURRENT - Respirator Fit Testing: All persons, including visitors, entering any area requiring the use or potential use of any negative pressure respirator must have had, as a minimum, a qualitative fit test, administered in accordance with OSHA 29 CFR 1910.134 or ANSI, within the last 12 months. If site conditions require the use of a full-face, negative-pressure, air-purifying respirator for protection from asbestos or lead, employees must have had a qualitative fit test, administered according to OSHA 29 CFR 1910.1001 or 1025/1926, within the last 6 months.

MEDICAL CURRENT - Medical Monitoring Requirements: All personnel, including visitors, entering the exclusion or contamination reduction zones must be certified as medically fit to work and to wear a respirator, if appropriate, in accordance with 29 CFR 1910, 29 CFR 1926/1910, or 29 CFR 1910.120.

The Site Field Safety Officer is responsible for verifying all certifications and fit tests.

SITE PERSONNEL AND CERTIFICATION STATUS

1.3.2 Subcontractor's Health and Safety Program Evaluation

Name of Subcontractor: NA

Activities To Be Conducted by Subcontractor:

Evaluation Criteria

Medical program meets OSHA/WESTON criteria ☐ Acceptable ☐ Unacceptable Comments:	Personal protective equipment available ☐ Acceptable ☐ Unacceptable Comments:	On-site monitoring equipment available, calibrated, and operated properly ☐ Acceptable ☐ Unacceptable Comments: N/A – Weston to provide
Safe working procedures clearly specified ☐ Acceptable ☐ Unacceptable Comments:	Training meets OSHA/WESTON criteria ☐ Acceptable ☐ Unacceptable Comments:	Emergency procedures ☐ Acceptable ☐ Unacceptable Comments:
Decontamination procedures ☐ Acceptable ☐ Unacceptable Comments:	General health and safety program evaluation ☐ Acceptable ☐ Unacceptable Comments:	Additional comments: ☐ Subcontractor has agreed to and will conform with the WESTON HASP for this project. ☐ Subcontractor will work under his own HASP, which has been accepted by project PM.

Evaluation Conducted by: NA **Date:**

Subcontractor

Name: NA **Title:** **Task(s): All** **Certification Level or Description: Level C & D** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)	**Name:** **Title:** **Task(s): All** **Certification Level or Description: Level C & D** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)
Name: **Title:** **Task(s): All** **Certification Level or Description: Level C & D** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)	**Name:** **Title:** **Task(s): All** **Certification Level or Description:** ☐ Medical Current ☐ Training Current ☐ Fit Test Current (Qual.) ☐ Fit Test Current (Quant.)

2. HEALTH AND SAFETY EVALUATION

2.1 HEALTH AND SAFETY EVALUATION

2.1.1 Task Hazard Assessment

Background Review: ☒ Complete ☐ Partial If partial why?

Activities Covered Under This Plan:

No.	Task/Subtask	Description	Schedule
1	Surface Soil Sampling	Surface soil samples will be hand collected from residential yards.	Starting 12/11/06
2	Surface Soil XRF Screening	Surface soil samples will be prepared (i.e. drying, sieving, grinding) and screened with a portable X-Ray Fluorescence (XRF) analyzer.	Starting 12/11/06
3	GPS	GPS all sample locations	Starting 12/11/06

Types of Hazards:

Numbers refer to one of the following hazard evaluation forms. Complete hazard evaluation forms for each appropriate hazard class.

Physiochemical 1

- ☐ Flammable
- ☐ Explosive
- ☐ Corrosive
- ☐ Reactive
- ☐ O_2 Rich
- ☐ O_2 Deficient

Chemically Toxic 1

- ☒ Inhalation ☐ Carcinogen
- ☒ Ingestion ☐ Mutagen
- ☒ Contact ☐ Teratogen
- ☐ Absorption
- ☒ OSHA 1910.1000 Substance (Air Contaminants)
- ☒ OSHA Specific Hazard Substance Standard (Refer to following page for listing)

Radiation 3

Ionizing:

- ☒ Internal exposure (i.e. XRF screening)
- ☐ External exposure

Non-ionizing:

- ☒ UV ☐ IR
- ☐ RF ☐ MicroW
- ☐ Laser

Biological 2

- ☐ Etiological Agent
- ☒ Other (plant, insect, animal)

Physical Hazards 4

- ☐ Construction Activities

Source/Location of Contaminants and Hazardous Substances:

Directly Related to Tasks

- ☒ Air
- ☐ Other Surface
- ☐ Groundwater
- ☒ Soil
- ☐ Surface Water
- ☐ Sanitary Wastewater
- ☐ Process Wastewater
- ☐ Other _ _____

Indirectly Related to Tasks — Nearby Process(es) That Could Affect Team Members:

- ☐ Client Facility/WESTON Work Location
- ☐ Nearby Non-Client Facility

Describe:

☒ Have activities (task[s]) been coordinated with facility? Yes.

HEALTH AND SAFETY EVALUATION

2.1.2 Chemical Hazards of Concern

☐ N/A

Chemical Contaminants of Concern

Provide the data requested for chemical contaminants on HASP Form 25 or attach data sheets from an acceptable source such as NIOSH pocket guide, condensed chemical dictionary, ACGIH TLV booklet, etc. List chemicals and concentrations below and locate data sheets in Attachment B of this HASP.

☐ N/A

Identify hazardous materials used or on-site and attach Material Safety Data Sheets (MSDSs) for all reagent type chemicals, solutions, or other identified materials that in normal use in performing tasks related to this project could produce hazardous substances. Ensure that all subcontractors and other parties working nearby are informed of the presence of these chemicals and the location of the MSDSs. Obtain from subcontractors and other parties, lists of the hazardous materials they use or have on-site and identify location of the MSDSs here. List chemicals and quantities below and locate MSDSs in Attachment B of this HASP.

Chemical Name	Concentration ( )	Chemical Name	Quantity
Cadmium in Soil	1,320 mg/kg	Alconox	Small amounts
Copper in Soil	3,650 mg/kg		
Lead in Soil	4,310 mg/kg		
Zinc in Soil	71,200 mg/kg		
Nickel in Soil	118 mg/kg		
Chromium in Soil	43.3 mg/kg		

OSHA-SPECIFIC HAZARDOUS SUBSTANCES

The following substances may require specific medical, training, or monitoring based on concentration or evaluation of risk. See the appropriate citation listed under 29 CFR 1910 or 1926 for additional information.

☐ 1910.1001 Asbestos	☐ 1910.1002 Coal tar pitch volatiles	☐ 1910.1003 4-Nitrobiphenyl, etc.	☐ 1910.1004 alpha-Naphthylamine
☐ 1910.1005 [Reserved]	☐ 1910.1006 Methyl chloromethyl ether	☐ 1910.1007 3,3'-Dichlorobenzidine (and its salts)	☐ 1910.1008 bis-Chloromethyl ether
☐ 1910.1009 beta-Naphthylamine	☐ 1910.1010 Benzidine	☐ 1910.1011 4-Aminodiphenyl	☐ 1910.1012 Ethyleneimine
☐ 1910.1013 beta-Propiolactone	☐ 1910.1014 2-Acetylaminofluorene	☐ 1910.1015 4-Dimethylaminoazobenzene	☐ 1910.1016 N-Nitrosodimethylamine
☐ 1910.1017 Vinyl chloride	☐ 1910.1018 Inorganic arsenic	☒ 1910.1025 Lead (Att. FLD# 46)	☒ 1910.1027 Cadmium
☐ 1910.1028 Benzene	☐ 1910.1029 Coke oven emissions	☐ 1910.1043 Cotton dust	☐ 1910.1044 1,2-Dibromo-3-chloropropane
☐ 1910.1045 Acrylonitrile	☐ 1910.1047 Ethylene oxide	☐ 1910.1048 Formaldehyde	☐ 1910.1050 Methylenedianiline
☐ 1910.1051 1,3 Butadiene	☐ 1910.1052 Methylene chloride		

HEALTH AND SAFETY EVALUATION

2.1.3 Biological Hazards of Concern

☒ **Poisonous Plants** (FLD 43)

Location/Task No(s).:

Source: ☐ Known ☒ Suspect

Route of Exposure: ☐ Inhalation ☐ Ingestion ☒ Contact ☐ Direct Penetration

Team Member(s) Allergic: ☒ Yes ☐ No

Immunization required: ☐ Yes ☒ No

☒ **Insects** (FLD 43)

Location/Task No(s).:

Source: ☐ Known ☒ Suspect

Route of Exposure: ☐ Inhalation ☐ Ingestion ☐ Contact ☒ Direct Penetration

Team Member(s) Allergic: ☐ Yes ☒ No

Immunization required: ☐ Yes ☒ No

☒ **Snakes, Reptiles** (FLD 43)

Location/Task No(s).:

Source: ☐ Known ☒ Suspect

Route of Exposure: ☐ Inhalation ☐ Ingestion ☐ Contact ☒ Direct Penetration

Team Member(s) Allergic: ☐ Yes ☒ No

Immunization required: ☐ Yes ☒ No

☒ **Animals** (FLD 43)

Location/Task No(s).:

Source: ☐ Known ☒ Suspect

Route of Exposure: ☐ Inhalation ☐ Ingestion ☐ Contact ☒ Direct Penetration

Team Member(s) Allergic: ☐ Yes ☒ No

Immunization required: ☐ Yes ☒ No

FLD 43 — WESTON Biohazard Field Operating Procedures: Att. OP ☐

☐ **Sewage**

Location/Task No(s).:

Source: ☐ Known ☐ Suspect

Route of Exposure: ☐ Inhalation ☐ Ingestion ☐ Contact ☐ Direct Penetration

Team Member(s) Allergic: ☐ Yes ☐ No

Immunization required: ☐ Yes ☐ No

Tetanus Vaccination within Past 10 yrs: ☐ Yes ☐ No

☐ **Etiologic Agents (List)**

Location/Task No(s).:

Source: ☐ Known ☐ Suspect

Route of Exposure: ☐ Inhalation ☐ Ingestion ☐ Contact ☐ Direct Penetration

Team Member(s) Allergic: ☐ Yes ☐ No

Immunization required: ☐ Yes ☐ No

FLD 44 — WESTON Bloodborne Pathogens Exposure Control Plan – First Aid Procedures: Att. OP ☒

FLD 45 — WESTON Bloodborne Pathogens Exposure Control Plan – Working with Infectious Waste: Att. OP ☐

HEALTH AND SAFETY EVALUATION

2.1.4 Radiation Hazards of Concern

NONIONIZING RADIATION

Task No.	Type of Nonionizing Radiation	Source On-Site	TLV/PEL	Wavelength Range	Control Measures	Monitoring Instrument
All	Ultraviolet	Solar			Appropriate clothing/ sunscreen	None
	Infrared	N/A				
	Radio Frequency	N/A				
	Microwave	N/A				
	Laser	N/A				

IONIZING RADIATION

Task No.	Radionuclide	Major Radiations	Radioactive Half-Life (Years)	DAC (µCii/mL)			Surface Contamination Limit	Monitoring Instrument
				D	W	Y		
2	Americium	Portable XRF Analyzer						TLD badge

HEALTH AND SAFETY EVALUATION

2.1.5 Physical Hazards of Concern

Phy. Haz. Cond.	Physical Hazard	Attach OP	WESTON OP Titles
Loud noise	Hearing loss/disruption of communication	☐	FLD01 - Noise Protection
Inclement weather	Rain/humidity/cold/ice/snow/lightning	☒	FLD02 - Inclement Weather
Steam heat stress	Burns/displaced oxygen/wet working surfaces	☐	FLD03 - Hot Process - Steam
Heat stress	Burns/hot surfaces/low pressure steam	☐	FLD04 - Hot Process - LT3
Ambient heat stress	Heat rash/cramps/exhaustion/heat stroke	☐	FLD05 - Heat Stress Prevention/Monitoring
Cold stress	Hypothermia/frostbite	☒	FLD06 - Cold Stress
Cold/wet	Trench/paddy/immersion foot/edema	☒	FLD07 - Wet Feet
Confined spaces	Falls/burns/drowning/engulfment/electrocution	☐	FLD08 - Confined Space Entry
Explosive vapors	Thermal burns/impaction/dismemberment	☐	FLD09 - Hot Work
Improper lifting	Back strain/abdomen/arm/leg muscle/joint injury	☒	FLD10 - Manual Lifting/Handling Heavy Objects
Uneven surfaces	Vehicle accidents/slips/trips/falls	☐	FLD11 - Rough Terrain
Poor housekeeping	Slips/trips/falls/punctures/cuts/fires	☒	FLD12 - Housekeeping
Structural integrity	Crushing/overhead hazards/compromised floors	☐	FLD13 - Structural Integrity
Hostile persons	Bodily injury	☒	FLD14 - Site Security
Remote area	Slips/trips/falls/back strain/communication	☐	FLD15 - Remote Area
Improper cyl. handling	Mechanical injury/fire/explosion/suffocation	☐	FLD16 - Pressure Systems - Compressed Gases
Water hazards	Poor visibility/entanglement/drowning/cold stress	☐	FLD17 - Diving
Water hazards	Drowning/heat/cold stress/hypothermia/falls	☐	FLD18 - Operation and Use of Boats
Water hazards	Drowning/frostbite/hypothermia/falls/electrocution	☐	FLD19 - Working Over Water
Vehicle hazards	Struck by vehicle/collision	☒	FLD20 - Traffic
Explosions	Explosion/fire/thermal burns	☐	FLD21 - Explosives
Moving mechanical parts	Crushing/pinch points/overhead hazards/electrocution	☐	FLD22 - Heavy Equipment Operation
Moving mech. parts	Overhead hazards/electrocution	☐	FLD23 - Cranes/Lifting Equipment Operation
Working at elevation	Overhead hazards/falls/electrocution	☐	FLD24 - Aerial Lifts/Man lifts
Working at elevation	Overhead hazards/falls/electrocution	☐	FLD25 - Working at Elevation
Working at elevation	Overhead hazards/falls/electrocution/slips	☐	FLD26 - Ladders
Working at elevation	Slips/trips/falls/overhead hazards	☐	FLD27 - Scaffolding
Trench cave-in	Crushing/falling/overhead hazards/suffocation	☐	FLD28 - Excavating/Trenching
Improper material handling	Back injury/crushing from load shifts	☒	FLD29 - Materials Handling
Physiochemical	Explosions/fires from oxidizing, flam./corr. material	☒	FLD30 - Hazardous Materials Use/Storage
Physiochemical	Fire and explosion	☐	FLD31 - Fire Prevention/Response Plan Required
Physiochemical	Fire	☒	FLD32 - Fire Extinguishers Required
Structural integrity	Overhead/electrocution/slips/trips/falls/fire	☐	FLD33 - Demolition
Electrical	Electrocution/shock/thermal burns	☐	FLD34 - Utilities
Electrical	Electrocution/shock/thermal burns	☒	FLD35 - Electrical Safety
Burns/fires	Heat stress/fires/burns	☐	FLD36 - Welding/Cutting/Burning
Impact/thermal	Thermal burns/high pressure impaction/heat stress	☐	FLD37 - High Pressure Washers
Impaction/electrical	Smashing body parts/pinching/cuts/electrocution	☐	FLD38 - Hand and Power Tools
Poor visibility	Slips/trips/falls	☒	FLD39 - Illumination
Fire/explosion	Burns/impaction	☐	FLD40 - Storage Tank Removal/Decommissioning
Communications	Disruption of communications	☒	FLD41 - Std. Hand/Emergency Signals
Energy/release	Unexpected release of energy	☐	FLD42 - Lockout/Tag-out
Drilling hazards	Electrocution/overhead hazards/pinch points	☐	2.5 - Drilling Safety Guide

3. TASK BY TASK ASSESMENT

3.1 TASK-BY-TASK RISK ASSESSMENT

3.1.1 Task 1 Description

TASK 1: Surface soil samples will be hand collected from residential yards

EQUIPMENT REQUIRED/USED

Sampler (i.e. tulip bubler, corer, hand augar, scoops), sample containers, plastic baggies, aluminum pans, steal toe boots, nitrile gloves, safety glasses, reflective safety vest, log book, sharpies, pens

POTENTIAL HAZARDS/RISKS

Chemical

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

Contaminate of concern are metals and may be present in the soil. No heavy equipment will be used, so nuisance dust should not be present in the ambient air. Main route of entry will be contact and ingestion. Personnel will wear gloves during sample collection. Safety glasses will be worn as necessary. Hands will be washed prior to leaving site or eating food.

Physical

☒ Hazard Present Risk Level: ☐ H ☒ M ☐ L

What justifies risk level?

Weather related hazards/concerns. Adherence to SOPs and proper winter gear will minimize the risk. Slip/Trip and falls will be a concern. Buddy system will be used. All work is scheduled to be conducted in the daylight hours; however, proper illumination will be adhered to if access is denied during the day time. Removing the soil sample from the sampler may warrant a hand injury. Proper gloves and tools will be used. Driving to several homes with a lot of stop and go activities may cause a vehicle incident. Personnel will use a buddy system and be cautious when driving and parking. Proper breaks and hydration practices will be used. Pets may pose a risk. Personnel will ensure homeowner has possession of the pet or has the pet secured prior to entrance in the yards. Security may also be a safety issue. EPA will have consent from the home owner to enter the property. If homeowner or tenant poses a threat, EPA and WESTON will remain calm and polite and immediately leave the home or area.

Biological

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

Insects, plants, and animals are expected to be minimal. General awareness/avoidance and required PPE should address the hazards. Also refer to FLD 43. If allergies are a factor, be aware of the surroundings and the plant life.

RADIOLOGICAL

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

None anticipated except for solar radiation. Use protective clothing and sunscreen as warranted.

LEVELS OF PROTECTION/JUSTIFICATION

Level D with safety glasses, nitrile gloves, work gloves, steal toe shoes, reflective safety vest and winter gear will be used. Route of exposure is mainly dermal and ingestion. The PPE above, proper safety behaviors and hand washing will be sufficient. Dust in the ambient air is not suspect to be a concern, but if heavy winds are present and dust is visually present in the ambient air, proper air monitoring with a PDR will be necessary to monitor the nuisance dust and possibly upgrade to Level C or use administrative controls to work during non-dusty hours.

SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED

All work will be performed in accordance with the provisions of this HASP, OSHA guidelines, and WESTON Standard Operating Procedures.

Field Ops per Form 07; Traffic control procedures – Attachment C; (provided with the revised FLD 42)

3.1 TASK-BY-TASK RISK ASSESSMENT

3.1.2 Task 1 Description

TASK 2: Surface soil samples will be prepared (i.e. drying, sieving, grinding) and screened with a portable X-Ray Fluorescence (XRF) analyzer.

EQUIPMENT REQUIRED/USED

XRF analyzer, XRF accessories (grinder, sieving), toaster, electrical cord w/ GFCI, AC Power converter, sample containers, plastic baggies, aluminum pans, TLD badge, steal toe boots, nitrile gloves, safety glasses, reflective safety vest, log book, sharpies, pens

POTENTIAL HAZARDS/RISKS

Chemical

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

Contaminate of concern are metals and may be present in the soil. No heavy equipment will be used, so nuisance dust should not be present in the ambient air. Main route of entry will be contact and ingestion. Personnel will wear gloves and safety glasses and will practice proper hand washing.

Physical

☒ Hazard Present Risk Level: ☐ H ☒ M ☐ L

What justifies risk level?

Electrical hazard if toaster will be used. Toaster will need to be placed in a safe and dry place. A GFCI cord will be used and the toaster will not be set outside when it is raining or snowing. A TLD badge will need to be worn when conducting XRF screening. All manufacture safety Ops will be used when operating the XRF. Weather related hazards/concerns. Adherence to SOPs and proper winter gear will minimize the risk. Slip/Trip and falls will be a concern. Buddy system will be used. All work is scheduled to be conducted in the daylight hours; however, proper illumination will be adhered to if access is denied during the day time. Removing the soil sample from the sampler may warrant a hand injury. Proper gloves and tools will be used. Driving to several homes with a lot of stop and go activities may cause a vehicle incident. Personnel will use a buddy system and be cautious when driving and parking. Proper breaks and hydration practices will be used. Pets may pose a risk. Personnel will ensure homeowner has position of the pet or has the pet secured prior to entrance in the yards. Security may also be a safety issue. EPA will have consent from the home owner to enter the property. If homeowner or tenant poses a threat, EPA and WESTON will remain come and polite and depart from the home or area.

Biological

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

Insects, plants, and animals are expected to be minimal. General awareness/avoidance and required PPE should address the hazards. Also refer to FLD 43. If allergies are a factor, be aware of the surroundings and the plant life.

RADIOLOGICAL

☒ Hazard Present Risk Level: ☐ H ☐ M ☒ L

What justifies risk level?

None anticipated except for solar radiation. Use protective clothing and sunscreen as warranted. The XRF unit has radioactive source but is not considered a threat since it is well contained.

LEVELS OF PROTECTION/JUSTIFICATION

Level D with safety glasses, nitrile gloves, work gloves, steal toe shoes, reflective safety vest and winter gear will be used. Route of exposure is mainly dermal and ingestion. The PPE above, proper safety behaviors and hand washing will be sufficient. Dust in the ambient air is not suspect to be a concern, but if heavy winds are present and dust is visually present in the ambient air, proper air monitoring with a PDR will be necessary to monitor the nuisance dust and possibly upgrade to Level C or use administrative controls to work during non-dusty hours. A TLD badge will be used when operating the XRF.

SAFETY PROCEDURES REQUIRED AND/OR FIELD OPS UTILIZED

All work will be performed in accordance with the provisions of this HASP, OSHA guidelines, and WESTON Standard Operating Procedures.

Field Ops per Form 07; Traffic control procedures – Attachment C; (provided with the revised FLD 42)

3.2 PERSONNEL PROTECTION PLAN

Engineering Controls
Describe Engineering Controls used as part of Personnel Protection Plan:

Task(s)	
All	None

Administrative Controls
Describe Administrative Controls used as part of Personnel Protection Plan:

Task(s)	
All	Follow the safety regulations and SOPs and use properly trained personnel.
All	Daily tailgate meetings
All	Buddy system (Weston will have 1 person on site; the EPA personnel will act as "buddy").

Personal Protective Equipment
Action Levels for Changing Levels of Protection. Refer to HASP Form 13, Site Air Monitoring Program—Action Levels. Define Action Levels for up or down grade for each task:

Task(s)	
All	Level D with safety glasses, nitrile gloves, work gloves, steal toe shoes, reflective safety vest TLD badge and winter gear will be used.

Description of Levels of Protection

Level D		Level D Modified
Task(s): ALL		**Task(s):**
☐ Head	Hard hat	☐ Head
☒ Eye and Face	Safety glasses (as needed)	☐ Eye and Face
☐ Hearing		☐ Hearing
☐ Arms and Legs Only		☐ Arms and Legs Only
☐ Appropriate Work Uniform		☐ Whole Body
☒ Hand – Gloves	Nitrile (sampling), Winter gloves (non-sampling)	☐ Apron
☒ Foot - Safety Boots	Steal Toe Boots	☐ Hand – Gloves
☐ Fall Protection		☐ Gloves (Inner)
☐ Flotation		☐ Gloves (Outer)
☒ Other	Reflective Safety Vest	☐ Foot - Safety Boots
		☐ Over Boots

4. MONITORING PROGRAM

4.1 SITE OR PROJECT HAZARD MONITORING PROGRAM

4.1.1 Air Monitoring Instruments

Instrument Selection and Initial Check Record- No Air Monitoring

Reporting Format: ☐ Field Notebook ☐ Field Data Sheets* ☐ Air Monitoring Log ☐ Trip Report ☐ Other

Instrument	Task No.(s)	Number Required	Number Received	Checked Upon Receipt	Comment	Initials
☐ CGI				☐		
☐ O_2				☐		
☐ CGI/O_2				☐		
☐ CGI/O_2/tox-PPM, H_2S,H_2S/CO				☐		
☐ RAD				☐		
☐ GM (Pancake)				☐		
☐ NaI (Micro R)				☐		
☐ ZnS (Alpha Scintillator)				☐		
☐ Other _____				☐		
☐ PID				☐		
☐ HNu 10.2				☐		
☐ HNu 11.7				☐		
☐ Photovac, TMA				☐		
☐ OVM				☐		
☐ Other MultiRae				☐		
☐ FID				☐		
☐ Fox 128				☐		
☐ Heath, AID, Other				☐		
☐ RAM, Mini-RAM, Other _____				☐		
☐ Monitox				☐		
Specify: _____				☐		
☐ Personal Sampling				☐		
Specify: _____				☐		
☐ Bio-Aerosol Monitor				☐		
☐ Pump - MSA, Dräeger, Sensidyne				☐		
☐ Tubes/type: Vinyl Chloride				☐		
☐ Tubes/type: Trichloroehtylene				☐		
☒ Other **No Air Monitoring**				☐		

4.1 SITE OR PROJECT HAZARD MONITORING PROGRAM

4.1.2 Air Monitoring Instruments Calibration Record

Instrument, Mfg., Model, Equip. ID No.	Date	Time	Calib. Material	Calib. Method Mfg.'s	Other	Initial Setting and Reading	Final Setting and Reading	Calibrator's Initials

4.3 ACTION LEVELS

(Will be attached if HASP gets amended and air monitoring will be conducted)

5. HOSPITAL INFORMATION

5.1 CONTINGENCIES

5.1.1 Emergency Contacts and Phone Numbers

Agency	Contact	Phone Number
Local Medical Emergency Facility (LMF)	Saint Margaret Hospital	911 / 815-664-5311
WESTON Medical Emergency Contact	Qualisys Sandra Dorsey	1-800-874-4676
WESTON Health and Safety	Corporate Health and Safety	610-701-3000
WESTON Health and Safety	Tonya Balla	847-918-4094
Fire Department	Dispatcher	911
Police Department	Dispatcher	911
On-Site Coordinator- SHSC	Shamille Lewis Cell	313-657-1831
Client Site Contact	Demaree Collier	312-886-0214
Site Telephone	Weston Vehicle/ Shamille Lewis Cell	313-657-1831
Nearest Telephone	Weston Vehicle/ Shamille Lewis Cell	313-657-1831

Local Medical Emergency Facility(s)

Name of Hospital: **Saint Margaret Hospital**

Address: US-6 Spring Valley	Phone No.: 815-664-5311
Name of Contact: Emergency Room	Phone No.: 911 / 815-664-5311

Type of Service:	**Route to Hospital (See Attached):**	**Travel time from site:**
☐ Physical trauma only ☐ Chemical exposure only ☒ Physical trauma and chemical exposure ☒ Available 24 hours	1. Starting in **LA SALLE, IL** on **4TH ST** go toward **TONTI ST** - go **0.1** mi 2. Turn L on **JOLIET ST[US-6]** - go **0.1** mi 3. Turn R to follow **US-6** - go **5.2** mi 4. Turn L on **MARY ST** - go **< 0.1** mi 5. Arrive at **SAINT MARGARET HOSPITAL**	10 minutes **Distance to hospital:** 5.4 mles **Name/no. of 24-hr ambulance service:** 911

Secondary or Specialty Service Provider

Name of Hospital:

Address:	Phone No.:
Name of Contact:	Phone No.:

Type of Service:	**Route to Hospital (see attached):**	**Travel time from site:**
☐ Physical trauma only ☐ Chemical exposure only ☐ Physical trauma and chemical exposure ☐ Available 24 hours		**Distance to hospital:** **Name/no. of 24-hr ambulance service:** /

See reporting an incident in Attachment F.

Yahoo! Driving Directions

Starting from: A La Salle, IL

Arriving at: B SAINT MARGARET HOSPITAL Us-6, Spring Valley, IL

Distance: 5.4 miles **Approximate Travel Time:** 10 mins

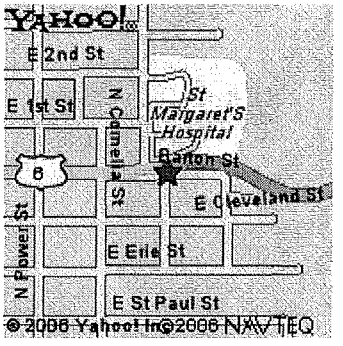
Your Directions

1.	Starting in **LA SALLE, IL** on **4TH ST** go toward **TONTI ST** - go **0.1** mi
2.	Turn L on **JOLIET ST[US-6]** - go **0.1** mi
3.	Turn R to follow **US-6** - go **5.2** mi
4.	Turn L on **MARY ST** - go **< 0.1** mi
5.	Arrive at **SAINT MARGARET HOSPITAL**

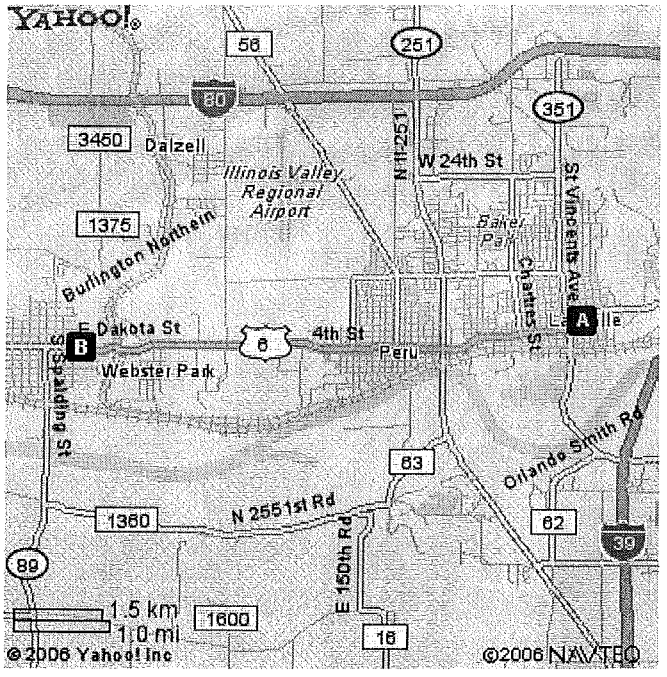
When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Your Full Route

Your Destination



Address:
SAINT MARGARET HOSPITAL Us-6
Spring Valley, IL



5.1 CONTINGENCIES

5.1.3 Response Plans

Medical - General	First Aid Kit: ☒ Yes ☐ No Blood Borne Pathogens Kit: ☒ Yes ☐ No	**Type** Field Kit and infection control kit	**Location** Near work activities or in vehicle.	Special First-Aid Procedures: Cyanides on-site ☐ Yes ☒ No If yes, contact LMF. Do they have antidote kit? ☐ Yes ☐ No
Provide first aid, if trained; assess and determine need for further medical assistance. Transport or arrange for transport after appropriate decontamination.	Eyewash required ☒ Yes ☐ No Small bottle	**Type** Small Bottle	**Location** Weston vehicle	**HF** on-site ☐ Yes ☒ No If yes, need neutralizing ointment for first-aid kit. Contact LMF.
	Shower required ☐ Yes ☒ No	**Type**	**Location**	

Plan for Response to Spill/Release		**Plan for Response to Fire/Explosion**		**Fire Extinguishers**
In the event of a spill or release, ensure safety, assess situation, and perform containment and control measures, as appropriate.	a. Cleanup per MSDSs if small; or sound alarm, call for assistance, notify Emergency Coordinator b. Evacuate to pre-determined safe place c. Account for personnel d. Determine if team can respond safely e. Mobilize per Site Spill Response Plan	In the event of a fire or explosion, ensure personal safety, assess situation, and perform containment and control measures, as appropriate:	a. Sound alarm and call for assistance, notify Emergency Coordinator b. Evacuate to predetermined safe place c. Account for personnel d. Use fire extinguisher only if safe and trained in its use e. Stand by to inform emergency responders of materials and conditions	Type/Location ABC/Vehicle ____/____ ____/____ ____/____ ____/____ ____/____ ____/____

Description of Spill Response Gear	Location	Description (Other Fire Response Equipment)	Location

Plan to Respond to Security Problems

Ask person(s) to leave. Avoid confrontation. Call police department @ 911.

6. DECONTAMINATION PLAN

6.1 GENERAL DECONTAMINATION PLAN

Personnel Decontamination

Consistent with the levels of protection required, step-by-step procedures for personnel decontamination for each level of protection are below.

Levels of Protection Required for Decontamination Personnel

The levels of protection required for personnel assisting with decontamination will be:

☐ Level B ☐ Level C ☒ Level D

Modifications include:

Disposition of Decontamination Wastes

Provide a description of waste disposition including identification of storage area, hauler, and final disposal site, if applicable

All waste material generated will be placed in appropriate containers and stored on site for eventual disposal.

Equipment Decontamination

A procedure for decontamination steps required for non-sampling equipment and heavy machinery follows:

NA

Sampling Equipment Decontamination

Sampling equipment will be decontaminated in accordance with the following procedure:

Non-disposal sampling supplies will be scrubbed and washed with alconox and rinsed with distilled water.

6.2 LEVEL D DECONTAMINATION PLAN

Check indicated functions or add steps, as necessary:

Function	Description of Process, Solution, and Container
☒ Segregated equipment drop	
☐ Boot cover and glove wash	
☐ Boot cover and glove rinse	
☐ Tape removal - outer glove and boot	
☐ Boot cover removal	
☐ Outer glove removal	
HOTLINE	
☐ Suit/safety boot wash	
☐ Suit/boot/glove rinse	
☐ Safety boot removal	
☐ Suit removal	
☐ Inner glove wash	
☐ Inner glove rinse	
☒ Inner glove removal	Place in garbage bag
☐ Inner clothing removal	
CONTAMINATION REDUCTION ZONE (CRZ)/SAFE ZONE BOUNDARY	
☒ Field wash	Wash hands with soap and water
☐ Redress	

Disposal Plan, End of Day:

All waste material generated will be place in appropriate containers and stored on site for eventual disposal.

Disposal Plan, End of Week:

As above

Disposal Plan, End of Project:

As above

7. TRAINING AND BRIEFING TOPICS/SIGN OFF SHEET

7.1 TRAINING AND BRIEFING TOPICS

The following items will be covered at the site-specific training meeting, daily or periodically.

☒ Site characterization and analysis, Sec. 3.0, 29 CFR 1910.120 l	☐ Level A
☒ Physical hazards, HASP Form 07	☐ Level B
☒ Chemical hazards, HASP Form 04	☐ Level C (if upgrade necessary)
☒ Animal bites, stings, and poisonous plants	☒ Level D
☐ Etiologic (infectious) agents	☒ Monitoring, 29 CFR 1910.120 (h)
☒ Site control, 29 CFR 1910.120 d	☒ Decontamination, 29 CFR 1910.120 (k)
☐ Engineering controls and work practices, 29 CFR 1910.120 (g)	☒ Emergency response, 29 CFR 1910.120 (l)
☐ Heavy machinery	☒ Elements of an emergency response, 29 CFR 1910.120 (l)
☐ Forklift	☒ Procedures for handling site emergency incidents, 29 CFR 1910.120 (l)
☐ Backhoe	☐ Off-site emergency response, 29 CFR 1910.120 (l)
☒ Equipment	☐ Handling drums and containers, 29 CFR 1910.120 (j)
☒ Tools	☐ Opening drums and containers
☐ Ladder, 29 CFR 1910.27 (d)/29 CFR 1926	☐ Electrical material handling equipment
☐ Overhead and underground utilities	☐ Radioactive waste
☐ Scaffolds	☐ Shock-sensitive waste
☐ Structural integrity	☐ Laboratory waste packs
☐ Unguarded openings - wall, floor, ceilings	☐ Sampling drums and containers
☐ Pressurized air cylinders	☐ Shipping and transport, 49 CFR 172.101, IATA
☒ Personal protective equipment, 29 CFR 1910.120 (g); 29 CFR 1910.134	☐ Tank and vault procedures
☐ Respiratory protection, 29 CFR 1910.120 (g); ANSI Z88.2	☒ Illumination, 29 CFR 1910.120 (m)
☐ Working over water FLD-19	☒ Sanitation, 29 CFR 1910.120 (n)
☐ Boating safety FLD-18	☐
☐	☐
☐	☐

7.2 HEALTH AND SAFETY PLAN APPROVAL/SIGNOFF FORM

Site Name: M&H Zinc	WO#: 20405.012.008.0097.00
Address: Lasalle, Illinois	

I understand, agree to, and will conform with the information set forth in this Health and Safety Plan (and attachments) and discussed in the personnel health and safety briefing(s).

Name	Signature	Date

ATTACHMENT A
CHEMICAL CONTAMINANTS DATA SHEETS

(Attach NIOSH)

7.3 Lead	7.3.1.1.1 CAS 7439-92-1
7.3.2 Pb	7.3.2.1.1 RTECS OF7525000
7.3.2.1.2 Synonyms & Trade Names Lead metal, Plumbum	7.3.2.1.3 DOT ID & Guide

7.3.3 Exposure Limits	NIOSH REL*: TWA 0.050 mg/m^3 See Appendix C [*Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C.]
	OSHA PEL*: [1910.1025] TWA 0.050 mg/m^3 See Appendix C [*Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C.]

7.3.3.1.1 IDLH	7.3.3.1.2 Conversion
100 mg/m^3 (as Pb) See: 7439921	

7.3.3.1.3 Physical Description

A heavy, ductile, soft, gray solid.

MW: 207.2	BP: 3164°F	MLT: 621°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 11.34
Fl.P: NA	UEL: NA	LEL: NA	

Noncombustible Solid in bulk form.

7.3.3.1.4 Incompatibilities & Reactivities

Strong oxidizers, hydrogen peroxide, acids

7.3.3.1.5 Measurement Methods

NIOSH 7082, 7105, 7300, 7301, 7303, 7700, 7701, 7702, 9100, 9102, 9105; OSHA ID121, ID125G, ID206
See: NMAM or OSHA Methods

7.3.3.1.6 Personal Protection & Sanitation	7.3.3.1.7 First Aid
(See protection) Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: Daily Remove: When wet or contaminated Change: Daily	(See procedures) Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

7.3.3.1.8 Respirator Recommendations

(See Appendix E) NIOSH/OSHA
Up to 0.5 mg/m^3:
(APF = 10) Any air-purifying respirator with an N100, R100, or P100 filter (including N100, R100, and P100 filtering facepieces) except quarter-mask respirators. Click here for information on selection of N, R, or P filters.
(APF = 10) Any supplied-air respirator
Up to 1.25 mg/m^3:

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode
(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate filter
Up to 2.5 mg/m^3:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters.
(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece
Up to 50 mg/m^3:
(APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode
Up to 100 mg/m^3:
(APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters./Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

7.3.3.1.9 Exposure Routes

inhalation, ingestion, skin and/or eye contact

7.3.3.1.10 Symptoms

Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypotension

7.3.3.1.11 Target Organs

Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue

7.4 *Zinc stearate*

7.4.1.1.1 CAS
557-05-1

7.4.2 $Zn(C_{18}H_{35}O_2)_2$

7.4.2.1.1 RTECS
ZH5200000

7.4.2.1.2 Synonyms & Trade Names

Dibasic zinc stearate, Zinc salt of stearic acid, Zinc distearate

7.4.2.1.3 DOT ID & Guide

7.4.3 Exposure Limits

NIOSH REL: TWA 10 mg/m^3 (total) TWA 5 mg/m^3 (resp)

OSHA PEL†: TWA 15 mg/m^3 (total) TWA 5 mg/m^3 (resp)

7.4.3.1.1 IDLH
N.D. See: IDLH INDEX

7.4.3.1.2 Conversion

7.4.3.1.3 Physical Description
Soft, white powder with a slight, characteristic odor.

MW: 632.4	BP: ?	MLT: 266°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 1.10
Fl.P(oc): 530°F	UEL: ?	LEL: ?	MEC: 20 g/m^3

Combustible Solid

7.4.3.1.4 Incompatibilities & Reactivities

Oxidizers, dilute acids [Note: Hydrophobic (i.e., repels water).]

7.4.3.1.5 Measurement Methods
NIOSH 0500, 0600
See: NMAM or OSHA Methods

7.4.3.1.6 Personal Protection & Sanitation
(See protection)
Skin: No recommendation
Eyes: No recommendation
Wash skin: No recommendation
Remove: No recommendation
Change: No recommendation

7.4.3.1.7 First Aid
(See procedures)
Eye: Irrigate immediately
Skin: Soap wash
Breathing: Fresh air
Swallow: Medical attention immediately

7.4.3.1.8 Respirator Recommendations
Not available.
Important additional information about respirator selection

7.4.3.1.9 Exposure Routes
inhalation, ingestion, skin and/or eye contact

7.4.3.1.10 Symptoms

Irritation eyes, skin, upper respiratory system; cough

7.4.3.1.11 Target Organs

Eyes, skin, respiratory system

See also: INTRODUCTION See ICSC CARD: 0987

7.5 Cadmium dust (as Cd)

7.5.1.1.1 CAS
7440-43-9 (metal)

7.5.2 Cd (metal)

7.5.2.1.1 RTECS
EU9800000 (metal)

7.5.2.1.2 Synonyms & Trade Names

Cadmium metal: Cadmium
Other synonyms vary depending upon the specific cadmium compound.

7.5.2.1.3 DOT ID & Guide
2570 154 (cadmium compound)

7.5.3 Exposure Limits

NIOSH REL*: Ca See Appendix A [*Note: The REL applies to all Cadmium compounds (as Cd).]

OSHA PEL*: [1910.1027] TWA 0.005 mg/m^3 [*Note: The PEL applies to all Cadmium compounds (as Cd).]

7.5.3.1.1 IDLH
Ca [9 mg/m^3 (as Cd)] See: IDLH INDEX

7.5.3.1.2 Conversion

7.5.3.1.3 Physical Description
Metal: Silver-white, blue-tinged lustrous, odorless solid.

MW: 112.4	BP: 1409°F	MLT: 610°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 8.65 (metal)
Fl.P: NA	UEL: NA	LEL: NA	

Metal: Noncombustible Solid in bulk form, but will burn in powder form.

7.5.3.1.4 Incompatibilities & Reactivities

Strong oxidizers; elemental sulfur, selenium & tellurium

7.5.3.1.5 Measurement Methods
NIOSH 7048, 7300, 7301, 7303, 9102; OSHA ID121, ID125G, ID189, ID206
See: NMAM or OSHA Methods

7.5.3.1.6 Personal Protection & Sanitation
(See protection)
Skin: No recommendation
Eyes: No recommendation
Wash skin: Daily
Remove: No recommendation
Change: Daily

7.5.3.1.7 First Aid
(See procedures)
Eye: Irrigate immediately
Skin: Soap wash
Breathing: Respiratory support
Swallow: Medical attention immediately

7.5.3.1.8 Respirator Recommendations
(See Appendix E) NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters./Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

7.5.3.1.9 Exposure Routes

inhalation, ingestion

7.5.3.1.10 Symptoms

Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]

7.5.3.1.11 Target Organs

respiratory system, kidneys, prostate, blood

7.5.3.1.12 Cancer Site

[prostatic & lung cancer]

7.6 Nickel metal and other compounds (as Ni)

7.6.1.1.1 CAS
7440-02-0 (Metal)

7.6.2 Ni (Metal)

7.6.2.1.1 RTECS
QR5950000 (Metal)

7.6.2.1.2 Synonyms & Trade Names

Nickel metal: Elemental nickel, Nickel catalyst
Synonyms of other nickel compounds vary depending upon the specific compound.

7.6.2.1.3 DOT ID & Guide

7.6.3 Exposure Limits

NIOSH REL*: Ca TWA 0.015 mg/m^3 See Appendix A [*Note: The REL does not apply to Nickel carbonyl.]

OSHA PEL*†: TWA 1 mg/m^3 [*Note: The PEL does not apply to Nickel carbonyl.]

7.6.3.1.1 IDLH
Ca [10 mg/m^3 (as Ni)] See: 7440020

7.6.3.1.2 Conversion

7.6.3.1.3 Physical Description
Metal: Lustrous, silvery, odorless solid.

MW: 58.7	BP: 5139°F	MLT: 2831°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 8.90 (Metal)
Fl.P: NA	UEL: NA	LEL: NA	

Metal: Combustible Solid; nickel sponge catalyst may ignite SPONTANEOUSLY in air.

7.6.3.1.4 Incompatibilities & Reactivities

Strong acids, sulfur, selenium, wood & other combustibles, nickel nitrate

7.6.3.1.5 Measurement Methods
NIOSH 7300, 7301, 7303, 9102; OSHA ID121, ID125G
See: NMAM or OSHA Methods

7.6.3.1.6 Personal Protection & Sanitation
(See protection)
Skin: Prevent skin contact
Eyes: No recommendation
Wash skin: When contaminated/Daily
Remove: When wet or contaminated
Change: Daily

7.6.3.1.7 First Aid
(See procedures)

Skin: Water flush immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

7.6.3.1.8 Respirator Recommendations
NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:

(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters./Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

7.6.3.1.9 Exposure Routes

inhalation, ingestion, skin and/or eye contact

7.6.3.1.10 Symptoms

Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]

7.6.3.1.11 Target Organs

Nasal cavities, lungs, skin

7.6.3.1.12 Cancer Site

[lung and nasal cancer]

7.7 Chromium metal

7.7.1.1.1 CAS
7440-47-3

7.7.2 Cr

7.7.2.1.1 RTECS
GB4200000

7.7.2.1.2 Synonyms & Trade Names

Chrome, Chromium

7.7.2.1.3 DOT ID & Guide

7.7.3 Exposure Limits

NIOSH REL: TWA 0.5 mg/m^3 See Appendix C

OSHA PEL*: TWA 1 mg/m^3 See Appendix C [*Note: The PEL also applies to insoluble chromium salts.]

7.7.3.1.1 IDLH
250 mg/m^3 (as Cr) See: 7440473

7.7.3.1.2 Conversion

7.7.3.1.3 Physical Description

Blue-white to steel-gray, lustrous, brittle, hard, odorless solid.

MW: 52.0	BP: 4788°F	MLT: 3452°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 7.14
Fl.P: NA	UEL: NA	LEL: NA	

Noncombustible Solid in bulk form, but finely divided dust burns rapidly if heated in a flame.

7.7.3.1.4 Incompatibilities & Reactivities

Strong oxidizers (such as hydrogen peroxide), alkalis

7.7.3.1.5 Measurement Methods

NIOSH 7024, 7300, 7301, 7303, 9102; OSHA ID121, ID125G
See: NMAM or OSHA Methods

7.7.3.1.6 Personal Protection & Sanitation

(See protection)
Skin: No recommendation
Eyes: No recommendation
Wash skin: No recommendation
Remove: No recommendation
Change: No recommendation

7.7.3.1.7 First Aid

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash
Breathing: Respiratory support
Swallow: Medical attention immediately

7.7.3.1.8 Respirator Recommendations

NIOSH
Up to 2.5 mg/m^3:
(APF = 5) Any quarter-mask respirator. Click here for information on selection of N, R, or P filters.*
Up to 5 mg/m^3:
(APF = 10) Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100, P100. Click here for information on selection of N, R, or P filters.*
(APF = 10) Any supplied-air respirator*

Up to 12.5 mg/m^3:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode*
(APF = 25) Any powered air-purifying respirator with a high-efficiency particulate filter.*
Up to 25 mg/m^3:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters.
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter*
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece
Up to 250 mg/m^3:
(APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters./Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

7.7.3.1.9 Exposure Routes

inhalation, ingestion, skin and/or eye contact

7.7.3.1.10 Symptoms

Irritation eyes, skin; lung fibrosis (histologic)

7.7.3.1.11 Target Organs

Eyes, skin, respiratory system

7.8 Copper fume (as Cu)

7.8.1.1.1 CAS
1317-38-0 (CuO)

7.8.2 CuO/Cu

7.8.2.1.1 RTECS
GL7900000 (CuO)

7.8.2.1.2 Synonyms & Trade Names

CuO: Black copper oxide fume, Copper monoxide fume, Copper(II) oxide fume, Cupric oxide fume
Cu: Copper fume [Note: Also see specific listing for Copper (dusts and mists).]

7.8.2.1.3 DOT ID & Guide

7.8.3 Exposure Limits

NIOSH REL: TWA 0.1 mg/m^3

OSHA PEL: TWA 0.1 mg/m^3

7.8.3.1.1 IDLH
100 mg/m^3 (as Cu) See: IDLH INDEX

7.8.3.1.2 Conversion

7.8.3.1.3 Physical Description
Finely divided black particulate dispersed in air. [Note: Exposure may occur in copper & brass plants and during the welding of copper alloys.]

MW: 79.5	BP: Decomposes	MLT: 1879°F (Decomposes)	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 6.4 (CuO)
Fl.P: NA	UEL: NA	LEL: NA	

CuO: Noncombustible Solid

7.8.3.1.4 Incompatibilities & Reactivities

CuO: Acetylene, zirconium [Note: See Copper (dusts and mists) for properties of Copper metal.]

7.8.3.1.5 Measurement Methods
NIOSH 7029, 7300, 7301, 7303; OSHA ID121, ID125G, ID206
See: NMAM or OSHA Methods

7.8.3.1.6 Personal Protection & Sanitation
(See protection)
Skin: No recommendation
Eyes: No recommendation
Wash skin: No recommendation
Remove: No recommendation
Change: No recommendation

7.8.3.1.7 First Aid
(See procedures)

Breathing: Respiratory support

7.8.3.1.8 Respirator Recommendations
NIOSH/OSHA
Up to 1 mg/m^3:
(APF = 10) Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100, P100. Click here for information on selection of N, R, or P filters.
(APF = 10) Any supplied-air respirator

Up to 2.5 mg/m^3:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode
(APF = 25) Any powered air-purifying respirator with a high-efficiency particulate filter.
Up to 5 mg/m^3:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters.
(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece
Up to 100 mg/m^3:
(APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure- demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of N, R, or P filters./Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

7.8.3.1.9 Exposure Routes

inhalation, skin and/or eye contact

7.8.3.1.10 Symptoms

Irritation eyes, upper respiratory system; metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough, lassitude (weakness, exhaustion); metallic or sweet taste; discoloration skin, hair

7.8.3.1.11 Target Organs

Eyes, skin, respiratory system (increase(d) risk with Wilson's disease)

ATTACHMENT B
MATERIAL SAFETY DATA SHEETS

Alconox® Material Safety Data Sheet

Alconox, Inc.
30 Glenn Street, Suite 309
White Plains, NY 10603

24 Hour Emergency Number - Chem-Tel (800) 255-3924

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I. Identification

Product Name (shown on label):	ALCONOX
CAS Registry Number:	Not Applicable
Effective Date:	January 1, 2001
Chemical Family:	Anionic Powdered Detergent
Mfr. Catalog #s for Sizes:	1104, 1125, 1150, 1101, 1103, 1112

National Fire Protection Association 704 Labeling:

NJTSRN: 1100

II. Hazardous Ingredients/Identity Information

There are no hazardous ingredients in ALCONOX as defined by the OSHA Standard and Hazardous Substance List 29 CFR 1910 Subpart Z.

III. Physical/Chemical Characteristics

Boiling Point (F):	Not Applicable
Vapor Pressure (mm Hg):	Not Applicable
Vapor Density (AIR=1):	Not Applicable
Specific Gravity (Water=1):	Not Applicable
Evaporation Rate (Butyl Acetate=1):	Not Applicable
Melting Point:	Not Applicable
Solubility in Water:	Appreciable-Soluble to 10% at ambient conditions
Appearance:	White powder interspersed with cream colored flakes.
pH:	9.5 (1%)

IV. Fire and Explosion Data

Flash Point (Method Used):	None
Flammable Limits:	LEL: No Data UEL: No Data
Extinguishing Media:	Water, dry chemical, CO2, foam
Special Fire fighting Procedures:	Self-contained positive pressure breathing apparatus and protective clothing should be worn when fighting fires involving chemicals.
Unusual Fire and Explosion Hazards:	None

V. Reactivity Data

Stability:	Stable
Hazardous Polymerization:	Will not occur
Incompatibility (Materials to Avoid):	None
Hazardous Decomposition or Byproducts:	May release CO2 on burning

VI. Health Hazard Data

Route(s) of Entry:	Inhalation? Yes Skin? No Ingestion? Yes
Health Hazards (Acute and Chronic):	Inhalation of powder may prove locally irritating to mucous membranes. Ingestion may cause discomfort and/or diarrhea. Eye contact may prove irritating.
Carcinogenicity:	NTP? No IARC Monographs? No OSHA Regulated? No
Signs and Symptoms of Exposure:	Exposure may irritate mucous membranes. May cause sneezing.
Medical Conditions Generally Aggravated by Exposure:	Not established. Unnecessary exposure to this product or any industrial chemical should be avoided. Respiratory conditions may be aggravated by powder.
Emergency and First Aid Procedures:	Eyes: Immediately flush eyes with water for at least 15 minutes. Call a physician. Skin: Flush with plenty of water. Ingestion: Drink large quantities of water or milk. Do not induce vomiting. If vomiting occurs administer fluids. See a physician for discomfort.

VII. Precautions for Safe Handling and Use

Steps to be Taken if Material is Released or Spilled:	Material foams profusely. Recover as much as possible and flush remainder to sewer. Material is biodegradable.
Waste Disposal Method:	Small quantities may be disposed of in sewer. Large quantities should be disposed of in accordance with local ordinances for detergent products.
Precautions to be Taken in Storing and Handling:	Material should be stored in a dry area to prevent caking.
Other Precautions:	No special requirements other than the good industrial hygiene and safety practices employed with any industrial chemical.

VII. Control Measures

Respiratory Protection (Specify Type):	Dust mask - Recommended
Ventilation:	Local Exhaust-Normal Special-Not Required

	Mechanical-Not Required Other-Not Required
Protective Gloves:	Impervious gloves are useful but not required.
Eye Protection:	Goggles are recommended when handling solutions.
Other Protective Clothing or Equipment:	None
Work/Hygienic Practices:	No special practices required

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH BUT NO WARRANTY IS EXPRESSED OR IMPLIED.

30 Glenn Street, Suite 309 White Plains, NY 10603 USA Ph: (914) 948-4040 Fax: (91

CON

33126-00 MOBIL REGULAR UNLEADED GASOLINE
MATERIAL SAFETY DATA BULLETIN

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: MOBIL REGULAR UNLEADED GASOLINE
SUPPLIER: EXXONMOBIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA 22037
24 - Hour Health and Safety Emergency (call collect): 609-737-4411
24 - Hour Transportation Emergency (Primary) CHEMTREC: 800-424-9300
(Secondary) 281-834-3296
Product and Technical Information:
Lubricants and Specialties: 800-662-4525 800-443-9966
Fuels Products: 800-947-9147
MSDS Fax on Demand: 613-228-1467
MSDS Internet Website: http://emmsds.ihssolutions.com/

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAMES AND SYNONYMS: HYDROCARBONS AND ADDITIVES
GLOBALLY REPORTABLE MSDS INGREDIENTS:

Substance Name	Approx. Wt%
GASOLINE (8006-61-9)	100
COMPONENT(S) OF PRODUCT INGREDIENTS INCLUDE:	
METHYL-TERT-BUTYL ETHER (1634-04-4)	15
ETHANOL (64-17-5)	11
XYLENE (1330-20-7)	10
ISOPENTANE (78-78-4)	9
TRIMETHYL BENZENE (25551-13-7)	8
TOLUENE (108-88-3)	5
BUTANE (106-97-8)	4
2-METHYLPENTANE (107-83-5)	4
PENTANE (109-66-0)	4
3-METHYLPENTANE (96-14-0)	2
BENZENE (71-43-2)	2
2,3-DIMETHYLBUTANE (79-29-8)	2
N-HEXANE (110-54-3)	2
ETHYL BENZENE (100-41-4)	2
3- METHYLHEXANE (589-34-4)	2
2- METHYLHEXANE (591-76-4)	1
METHYLCYCLOHEXANE (108-87-2)	1

NOTE: The concentration of the components shown above may vary substantially. In certain countries benzene content may be limited to lower levels (eg. US reformulated gasoline). Oxygenates such as tertiary-amyl-methyl ether, ethanol, di-isopropyl ether, and ethyl-tertiary-butyl ether may be present (eg. concentration to provide a minimum oxygen content of 1.5 Wt% in the US). Because of volatility

considerations, gasoline vapor may have concentrations of components very different from those of liquid gasoline. The major components of gasoline vapor are: butane, isobutane, pentane and isopentane. The reportable component percentages, shown in the Regulatory Information section, are based on API's evaluation of a typical gasoline mixture. See Section 8 for exposure limits (if applicable).

3. HAZARDS IDENTIFICATION

This product is considered hazardous according to regulatory guidelines (See Section 15).

EMERGENCY OVERVIEW: Clear (May Be Dyed) Liquid. EXTREMELY FLAMMABLE, HIGH HAZARD. Liquid can release considerable vapor at temperatures below ambient which readily form flammable mixtures. Vapors settle to ground level and may reach, via drains and other underground passages, ignition sources remote from the point of escape. Product can accumulate a static charge which may cause a fire or explosion. DOT ERG No. : 128

POTENTIAL HEALTH EFFECTS: Skin irritation. May cause eye and respiratory irritation, headache, dizziness, nausea, loss of consciousness, and in cases of extreme exposure, possibly death. Low viscosity material-if swallowed may enter the lungs and cause lung damage. Overexposure to benzene may result in cancer, blood disorders and damage to the bone marrow. Long-term exposure to gasoline vapor has caused kidney and liver cancer in laboratory animals. Case reports of chronic gasoline abuse (such as sniffing) and chronic misuse as a solvent or as a cleaning agent have shown a range of nervous system effects, sudden deaths from heart attacks, blood effects and leukemia. These effects are not expected to occur at exposure levels encountered in the distribution and use of gasoline as a motor fuel.

POTENTIAL ENVIRONMENTAL EFFECTS: Toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

For further health effects/toxicological data, see Section 11.

4. FIRST AID MEASURES

EYE CONTACT: Flush thoroughly with water. If irritation occurs, call a physician.

SKIN CONTACT: Wash contact areas with soap and water. Immediately remove contaminated clothing, including shoes. (See Section 16 - Injection Injury)

INHALATION: Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with mechanical device or use mouth-to-mouth resuscitation.

INGESTION: Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIANS: Material if ingested may be aspirated into the lungs and can cause chemical pneumonitis. PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE: Skin contact may aggravate an existing dermatitis. Benzene- Individuals with liver disease may be more susceptible to toxic effects. Hexane- Individuals with neurological disease should avoid exposure.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: Carbon Dioxide, Foam, Dry Chemical, Water Fog.
SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area. For large spills, fire fighting foam is the preferred agent and should be applied in sufficient quantities to blanket the product surface. Water may be ineffective, but water should be used to keep fire-exposed containers cool. Water spray may be used to flush spill away from exposures, but good judgement should be practiced to prevent spreading of the product into sewers, streams or drinking water supplies. If a leak or spill has not ignited, apply a foam blanket to suppress the release of vapors. If foam is not available, a water spray curtain can be used to disperse vapors and to protect personnel attempting to stop the leak.
SPECIAL PROTECTIVE EQUIPMENT: For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.
UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTREMELY FLAMMABLE, HIGH HAZARD. Liquid can release considerable vapor at temperatures below ambient which readily form flammable mixtures. Vapors settle to ground level and may reach, via drains and other underground passages, ignition sources remote from the point of escape. Product can accumulate a static charge which may cause a fire or explosion.
COMBUSTION PRODUCTS: Fumes, smoke, carbon monoxide, sulfur oxides, aldehydes and other decomposition products, in the case of incomplete combustion.
Flash Point C(F): < -40(-40) (ASTM D-56).
Flammable Limits (approx.% vol.in air) - LEL: 1.4%, UEL: 7.6%
NFPA HAZARD ID: Health: 1, Flammability: 3, Reactivity: 0

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6. ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES: Report spills/releases as required to appropriate authorities. U.S. Coast Guard and EPA regulations require immediate reporting of spills/releases that could reach any waterway including intermittent dry creeks. Report spill/release to Coast Guard National Response Center toll free number (800)424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.
PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:
LAND SPILL: Eliminate sources of ignition. Warn occupants in downwind areas of fire and explosion hazard. Shut off source taking normal safety precautions. Take measures to minimize the effects on ground water. Recover by pumping using explosion-proof equipment or contain spilled liquid with sand or other suitable absorbent and remove mechanically into containers. If necessary, dispose of adsorbed residues as directed in Section 13.
WATER SPILL: Eliminate sources of ignition. Advise occupants and ships in the vicinity in downwind areas of fire and explosion hazard and warn them to stay clear. Notify port and other relevant authorities. Do not confine in area of leakage. Allow liquid to evaporate from the surface. Do not use dispersants.
ENVIRONMENTAL PRECAUTIONS: Prevent material from entering sewers, water sources or low lying areas; advise the relevant authorities if it has, or if it contaminates soil/vegetation.
PERSONAL PRECAUTIONS: See Section 8

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7. HANDLING AND STORAGE

HANDLING: USE NON-SPARKING TOOLS AND EXPLOSION-PROOF EQUIPMENT. NEVER SIPHON GASOLINE BY MOUTH. GASOLINE SHOULD NOT BE USED AS A SOLVENT OR AS A CLEANING AGENT. Avoid contact with skin. Avoid inhalation of vapors or mists. Use in well ventilated area away from all ignition sources. This liquid is volatile and gives off invisible vapors. Either the liquid or vapor may settle in low areas or travel some distance along the ground or surface to ignition sources where they may ignite or explode. Use product with caution around heat, sparks, pilot lights, static electricity, and open flames. It is unlawful and dangerous to put gasoline into unapproved containers. Do not fill container in or on a vehicle. Static electricity may ignite vapors and cause fire. Place container on ground when filling and keep nozzle in contact with container. See Section 8 for additional personal protection advice when handling this product.

STORAGE: Drums must be grounded and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters. Store away from all ignition sources in a cool, well ventilated area equipped with an automatic sprinkling system. Outside or detached storage preferred. Storage containers should be grounded and bonded.

SPECIAL PRECAUTIONS: To prevent and minimize fire or explosion risk from static accumulation and discharge, effectively bond and/or ground product transfer system. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers, etc.) in or around any fueling operation or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. Electrical equipment and fittings must comply with local fire prevention regulations for this class of product. Use the correct grounding procedures. Refer to national or local regulations covering safety at petroleum handling and storage areas for this product.

EMPTY CONTAINER WARNING: Empty containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS:
ExxonMobil recommends an 8-hour time-weighted average (TWA) exposure of 300 mg/m3 (100 ppm vapor).

		---TWA---		----STEL---		NOTE
Substance Name (CAS-No.)	Source	ppm	mg/m3	ppm	mg/m3	
GASOLINE (8006-61-9)						
	OSHA	300	900	500	1500	

	ACGIH	300	890	500	1480
	XOM	100	300		
METHYL-TERT-BUTYL ETHER (1634-04-4)					
	ACGIH	40	144		
	XOM	25		75	
ETHANOL (64-17-5)					
	OSHA	1000	1900		
	ACGIH	1000	1880		
XYLENE (1330-20-7)					
O, M, P, -Isomers	OSHA	100	435	150	655
O, M, P, -Isomers	ACGIH	100	434	150	651
ISOPENTANE (78-78-4)					
All Isomers	ACGIH	600	1770		
TRIMETHYL BENZENE (25551-13-7)					
	OSHA	25	125		
	ACGIH	25	123		
TOLUENE (108-88-3)					
	OSHA	100	375	150	560
Skin	ACGIH	50	188		
	XOM		200		
BUTANE (106-97-8)					
	OSHA	800	1900		
	ACGIH	800	1900		
	XOM	1000		1500	
2-METHYLPENTANE (107-83-5)					
Isomer of N-Hexane	ACGIH	500	1760	1000	3500
PENTANE (109-66-0)					
	OSHA	600	1800	750	2250
All Isomers	ACGIH	600	1770		
3-METHYLPENTANE (96-14-0)					
Isomer of N-Hexane	ACGIH	500	1760	1000	3500
BENZENE (71-43-2)					
	OSHA	1		5	
Skin	ACGIH	0.5	1.6	2.5	8
2,3-DIMETHYLBUTANE (79-29-8)					
Isomer of N-Hexane	ACGIH	500	1760	1000	3500
N-HEXANE (110-54-3)					
	OSHA	50	180		
Other Isomers	OSHA	500	1800	1000	3600
N-Hexane Skin	ACGIH	50	176		
Other Isomers	ACGIH	500	1760	1000	3500
ETHYL BENZENE (100-41-4)					
	OSHA	100	435	125	545
	ACGIH	100	434	125	543
METHYLCYCLOHEXANE (108-87-2)					
	OSHA	400	1600		
	ACGIH	400	1610		

NOTE: Limits shown for guidance only. Follow applicable regulations.
VENTILATION: Ventilation equipment must be explosion proof.
RESPIRATORY PROTECTION: Approved respiratory equipment must be used when airborne concentrations are unknown or exceed the recommended exposure limit. Self-contained breathing apparatus may be required for use in confined or enclosed spaces.
EYE PROTECTION: If splash with liquid is possible, chemical type goggles should be worn.
SKIN PROTECTION: Impervious gloves should be worn. Good personal

hygiene practices should always be followed.

9. PHYSICAL AND CHEMICAL PROPERTIES

Typical physical properties are given below. Consult Product Data Sheet for specific details.
APPEARANCE: Liquid
COLOR: Clear (May Be Dyed)
ODOR: Gasoline
ODOR THRESHOLD-ppm: NE
pH: NA
BOILING POINT C(F): > 35(95)
MELTING POINT C(F): NA
FLASH POINT C(F): < -40(-40) (ASTM D-56)
FLAMMABILITY (solids): NE
AUTO FLAMMABILITY C(F): NE
EXPLOSIVE PROPERTIES: NA
OXIDIZING PROPERTIES: NA
VAPOR PRESSURE-mmHg 20 C: > 200.0
VAPOR DENSITY: 3.0
EVAPORATION RATE: NE
RELATIVE DENSITY, 15/4 C: 0.79
SOLUBILITY IN WATER: Negligible
PARTITION COEFFICIENT: > 1
VISCOSITY AT 40 C, cSt: < 1.0
VISCOSITY AT 100 C, cSt: NA
POUR POINT C(F): NA
FREEZING POINT C(F): NE
VOLATILE ORGANIC COMPOUND: NE
DMSO EXTRACT, IP-346 (WT.%): NA
NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES
FOR FURTHER TECHNICAL INFORMATION, CONTACT YOUR MARKETING REPRESENTATIVE

10. STABILITY AND REACTIVITY

STABILITY (THERMAL, LIGHT, ETC.): Stable.
CONDITIONS TO AVOID: Heat, sparks, flame and build up of static electricity.
INCOMPATIBILITY (MATERIALS TO AVOID): Halogens, strong acids, alkalies, and oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS: Product does not decompose at ambient temperatures.
HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL DATA

---ACUTE TOXICOLOGY---
ORAL TOXICITY (RATS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.
DERMAL TOXICITY (RABBITS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.
INHALATION TOXICITY (RATS): Practically non-toxic (LC50: greater

than 5 mg/l). ---Based on testing of similar products and/or the components.
EYE IRRITATION (RABBITS): Practically non-irritating. (Draize score: greater than 6 but 15 or less). ---Based on testing of similar products and/or the components.
SKIN IRRITATION (RABBITS): Irritant. (Primary Irritation Index: 3 or greater but less than 5). ---Based on testing of similar products and/or the components.
OTHER ACUTE TOXICITY DATA: Inhalation of high concentrations of vapors or aerosols/mists, especially deliberate or abuse exposure, may cause respiratory system irritation and damage. These exposures may also result in central nervous system depression and damage, possibly leading to death. Prolonged skin contact with gasoline may cause severe skin irritation similar to a chemical burn. The above effects, which may result from the whole gasoline or some of the gasoline components, are well documented in the medical literature. HAZARDS OF COMBUSTION PRODUCTS: Exposure to high concentrations of carbon monoxide can cause loss of consciousness, heart damage, brain damage and death.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---

Two dermal studies resulted in significant irritation in rabbits but no significant systemic toxicity. 90-day inhalation exposures (approximately 1500 ppm vapor) in rats and monkeys produced light hydrocarbon nephropathy in male rats, but no other significant systemic toxicity.

---NEUROTOXICOLOGY (SUMMARY)---

Exposure to high concentrations of unleaded gasoline in rodents caused reversible central nervous system depression, however, no persistent neurotoxic effects were observed in subchronic inhalation studies of gasoline blending streams. No neurotoxic effects, as measured by a functional observation battery, motor activity, and neuropathology, were observed in rats exposed to light alkylate naphtha for 13 weeks at concentrations up to 6600 ppm. The medical literature clearly documents neurotoxic effects in humans from abusive gasoline inhalation (sniffing).

---REPRODUCTIVE TOXICOLOGY (SUMMARY)---

Two separate inhalation teratology studies of unleaded gasoline vapor at exposures up to 1600 ppm and 9000 ppm for 6 hours/day on days 6-20 did not result in any significant developmental effects in rats. No significant effects were observed in the mothers or offspring. A two-generation inhalation reproductive study (CONCAWE) of unleaded gasoline showed no reproductive or developmental effects in rats exposed to concentrations up to 20, 000 mg/m3 (approx. 8000 ppm).

---CHRONIC TOXICOLOGY (SUMMARY)---

A lifetime mouse skin painting study of unleaded gasoline applied at 50 microliters, three times weekly, resulted in some severe skin irritation and changes, but no statistically significant increase in skin cancer or cancer to any other organ. A lifetime inhalation study of vaporized unleaded gasoline at up to 2000 ppm caused liver tumors in female mice and increased kidney tumors in male rats. The kidney tumors resulted from the formation of a compound unique to male rats, and are not considered relevant to humans. The U.S. EPA Risk Assessment Forum concluded that the male rat kidney tumor results are not relevant for human risk assessment. The implications for the female mice liver tumor data for human risk assessment have not been fully determined. Multiple short-term cancer predicative tests (Ames Test, etc.) have routinely been negative (no cancer or mutagenic potential) for unleaded gasoline.

---SENSITIZATION (SUMMARY)---

Unleaded gasoline was not a skin sensitizer in tests in a Buehler Guinea Pig Sensitization Assay.

---OTHER TOXICOLOGY DATA---

Gasoline and Refinery Streams: Isolated constituents of gasoline may display these or other potential hazards in laboratory tests. Gasoline consists of a complex blend of petroleum/processing derived paraffinic, olefinic, naphthenic and aromatic hydrocarbons which include up to 5% benzene (with 1-2 % typical in the U.S.), n-hexane, mixed xylenes, toluene, ethylbenzene and trimethyl benzene. Benzene has also caused damage to the fetus of test animals in developmental studies. Benzene has tested positive (mutagenic) in a number of short-term cancer/mutation predicative tests. Repeated exposures to low levels of benzene (50-500 ppm) have been reported to result in blood abnormalities including anemia and, in rare cases, leukemia in both animals and humans. Prolonged exposure to n-hexane may result in a condition known as peripheral neuropathy. This is nervous system damage and is characterized by numbness of the extremities and, in extreme cases, paralysis. This product contains ethylbenzene. The International Agency for Research on Cancer (IARC) has evaluated ethylbenzene and classified it as possibly carcinogenic to humans (Group 2B) based on sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans. Methyl Tertiary Butyl Ether (MTBE) was tested for carcinogenicity, neurotoxicity, chronic, reproductive, and developmental toxicity. The NOAEL for all end points evaluated in three animal species was 400 ppm or greater. An increase in kidney tumors/damage and liver tumors was observed in animals exposed to high concentrations of MTBE. Some embryo/fetal toxicity and birth defects were observed in the offspring of pregnant mice exposed to maternally toxic doses of MTBE, however the offspring of exposed pregnant rabbits were unaffected. The significance of the animal findings at high exposures are not believed to be directly related to potential human health hazards in the workplace.

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12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE AND EFFECTS:

In the absence of specific environmental data for this product, this assessment is based on information for representative substances.

ECOTOXICITY: Based on test results for similar products, this substance may be toxic to aquatic organisms such as algae and daphnia (EL50/ IrL50 =1-10 mg/L). This substance has also been shown to be toxic to fish (LL50 = 1-10 mg/L).

MOBILITY: Dissolution of the higher molecular weight hydrocarbon components in water will be limited, but losses through sediment adsorption may be significant.

PERSISTENCE AND DEGRADABILITY: The majority of the components in this product would be expected to be inherently biodegradable. When released into the environment, some of the constituents of gasoline will volatilize and be photodegraded in the atmosphere. The less volatile, more water-soluble components which are aromatic hydrocarbons will also undergo aqueous photodegradation.

BIOACCUMULATIVE POTENTIAL: Not established.

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13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Product is suitable for burning for fuel value in compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.
RCRA INFORMATION: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity, or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP).
BENZENE: 2.3200 PCT (TCLP)
FLASH: < -40(-40) C(F)

14. TRANSPORT INFORMATION

USA DOT:	
SHIPPING NAME:	Gasoline
HAZARD CLASS & DIV:	3
ID NUMBER:	UN1203
ERG NUMBER:	128
PACKING GROUP:	PG II
STCC:	NE
DANGEROUS WHEN WET:	No
POISON:	No
LABEL(s):	Flammable Liquid
PLACARD(s):	Flammable
PRODUCT RQ:	NA
MARPOL III STATUS:	NA
RID/ADR:	
HAZARD CLASS:	3
HAZARD SUB-CLASS:	3(b)
LABEL:	3
DANGER NUMBER:	33
UN NUMBER:	1203
SHIPPING NAME:	Motor Spirit
REMARKS:	NA
IMO:	
HAZARD CLASS & DIV:	3
UN NUMBER:	1203
PACKING GROUP:	PG II
SHIPPING NAME:	Gasoline
LABEL(s):	Flammable Liquid
MARPOL III STATUS:	NA
ICAO/IATA:	
HAZARD CLASS & DIV:	3
ID/UN Number:	1203
PACKING GROUP:	PG II
SHIPPING NAME:	Gasoline
SUBSIDIARY RISK:	NA
LABEL(s):	Flammable Liquid

STATIC ACCUMULATOR (50 picosiemens or less): YES

15. REGULATORY INFORMATION

US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance

with OSHA 29 CFR 1910.1200 and determined to be hazardous.
EU Labeling: Product is dangerous as defined by the European Union Dangerous Substances/Preparations Directives.
Symbol: F+ T N Extremely flammable, Toxic, Dangerous for the environment.
Risk Phrase(s): R12-45-38-65-67-51/53.
Extremely flammable. May cause cancer. Irritating to skin. Harmful: may cause lung damage if swallowed. Vapors may cause drowsiness and dizziness. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety Phrase(s): S16-53-45-2-23-24-29-43-62.
Keep away from sources of ignition - No smoking. Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Keep out of the reach of children. Do not breathe vapor. Avoid contact with skin. Do not empty into drains. In case of fire use foam/drypowder/CO2. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.
Contains: Low Boiling Point Naphtha.
Governmental Inventory Status: All components comply with TSCA, and EINECS/ELINCS.
U.S. Superfund Amendments and Reauthorization Act (SARA) Title III:
This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".
SARA (311/312) REPORTABLE HAZARD CATEGORIES:
FIRE CHRONIC ACUTE
This product contains the following SARA (313) Toxic Release Chemicals:

CHEMICAL NAME	CAS NUMBER	CONC.
BENZENE(COMPONENT ANALYSIS)	71-43-2	2.3%
PSEUDOCUMENE (1,2, 4-TRIMETHYLBENZENE)(COMPONENT ANALYSIS)	95-63-6	4.6%
ETHYL BENZENE(COMPONENT ANALYSIS)	100-41-4	1.6%
TOLUENE(COMPONENT ANALYSIS)	108-88-3	4.7%
N-HEXANE(COMPONENT ANALYSIS)	110-54-3	1.7%
XYLENES(COMPONENT ANALYSIS)	1330-20-7	9.9%
METHYL-TERT-BUTYL ETHER(COMPONENT ANALYSIS)	1634-04-4	15.1%

The following product ingredients are cited on the lists below:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
ETHYL ALCOHOL (COMPONENT ANALYSIS)	64-17-5	1, 6, 10, 18, 19, 20, 21, 23, 25, 26
BENZENE (COMPONENT ANALYSIS) (2.32%)	71-43-2	1, 2, 4, 6, 9, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26
ISOPENTANE (COMPONENT ANALYSIS)	78-78-4	1, 19, 24, 25
2,3-DIMETHYLBUTANE (COMPONENT ANALYSIS)	79-29-8	1, 19, 25
PSEUDOCUMENE (1,2, 4-TRIMETHYLBENZENE) (COMPONENT ANALYSIS)	95-63-6	1, 20, 24, 25
PENTANE, 3-METHYL- (COMPONENT ANALYSIS)	96-14-0	1, 19, 25
METHYL CYCLOPENTANE (COMPONENT ANALYSIS)	96-37-7	19, 25, 26

ETHYL BENZENE (COMPONENT ANALYSIS)	100-41-4	1, 8, 10, 18, 19, 20, 21, 23, 24, 25, 26
BUTANE (COMPONENT ANALYSIS)	106-97-8	1, 10, 18, 19, 20, 21, 23, 24, 25, 26
PENTANE, 2-METHYL- (COMPONENT ANALYSIS)	107-83-5	1, 19, 23, 25
METHYLCYCLOHEXANE (COMPONENT ANALYSIS)	108-87-2	1, 10, 18, 19, 20, 21, 23, 25, 26
TOLUENE (COMPONENT ANALYSIS) (4.65%)	108-88-3	1, 10, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26
PENTANE (COMPONENT ANALYSIS)	109-66-0	1, 10, 18, 19, 20, 21, 23, 24, 25, 26
N-HEXANE (COMPONENT ANALYSIS)	110-54-3	1, 10, 18, 19, 20, 21, 23, 24, 25, 26
2-METHYL 2-BUTENE (COMPONENT ANALYSIS)	513-35-9	19, 25
3-METHYLHEXANE (COMPONENT ANALYSIS)	589-34-4	19, 25
HEXANE, 2-METHYL- (COMPONENT ANALYSIS)	591-76-4	19, 25
1-HEXENE (COMPONENT ANALYSIS)	592-41-6	1, 19, 25
XYLENES (COMPONENT ANALYSIS) (9.90%)	1330-20-7	1, 10, 18, 19, 20, 21, 22, 23, 24, 25, 26
METHYL-TERT-BUTYL ETHER (COMPONENT ANALYSIS)	1634-04-4	1, 21, 24, 25
GASOLINE	8006-61-9	1, 8, 10, 18, 19, 20, 21, 23, 26
TRIMETHYL BENZENE (COMPONENT ANALYSIS)	25551-13-7	1, 10, 18, 19, 20, 21, 23, 25, 26

--- REGULATORY LISTS SEARCHED ---

1=ACGIH ALL	6=IARC 1	11=TSCA 4	16=CA P65 CARC	21=LA RTK
2=ACGIH A1	7=IARC 2A	12=TSCA 5a2	17=CA P65 REPRO	22=MI 293
3=ACGIH A2	8=IARC 2B	13=TSCA 5e	18=CA RTK	23=MN RTK
4=NTP CARC	9=OSHA CARC	14=TSCA 6	19=FL RTK	24=NJ RTK
5=NTP SUS	10=OSHA Z	15=TSCA 12b	20=IL RTK	25=PA RTK
				26=RI RTK

Code key: CARC=Carcinogen; SUS=Suspected Carcinogen; REPRO=Reproductive

16. OTHER INFORMATION

USE: UNLEADED MOTOR FUEL
NOTE: PRODUCTS OF EXXON MOBIL CORPORATION AND ITS AFFILIATED COMPANIES ARE NOT FORMULATED TO CONTAIN PCBS.
Health studies have shown that many hydrocarbons pose potential human health risks which may vary from person to person. Information provided on this MSDS reflects intended use. This product should not be used for other applications. In any case, the following advice should be considered:
INJECTION INJURY WARNING: If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.
Precautionary Label Text:

CONTAINS GASOLINE
DANGER!
EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. CAUSES SKIN IRRITATION. RESPIRATORY IRRITATION, HEADACHE, DIZZINESS, NAUSEA, LOSS OF CONSCIOUSNESS, AND IN CASES OF EXTREME EXPOSURE, POSSIBLY DEATH. LOW VISCOSITY MATERIAL-IF SWALLOWED, MAY BE ASPIRATED AND CAN CAUSE SERIOUS OR FATAL LUNG DAMAGE.
OVEREXPOSURE TO BENZENE MAY RESULT IN CANCER, BLOOD DISORDERS, AND DAMAGE TO THE BONE MARROW. LONG-TERM EXPOSURE TO GASOLINE VAPOR HAS CAUSED KIDNEY AND LIVER CANCER IN LABORATORY ANIMIALS, BLOOD EFFECTS, AND NERVOUS SYSTEM DAMAGE.
Keep away from heat, sparks, and flame. Avoid all personal contact. Avoid prolonged breathing of vapor. Use with adequate ventilation. Keep container closed. Approved portable containers must be properly grounded when transferring fuel. For use as a motor fuel only. Misuse of gasoline may cause serious injury or illness. Never siphon by mouth. Not to be used as a solvent or skin cleaning agent.
FIRST AID: In case of contact, wash skin with soap and water. Immediately remove contaminated clothing, including shoes. Destroy or wash clothing before reuse. If swallowed, seek immediate medical attention. Do not induce vomiting. Only induce vomiting at the instruction of a physician.
This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm are created by the combustion of this product. Refer to product Material Safety Data Sheet for further safety and health information.

****

For Internal Use Only: MHC: 1* 1* 1* 1* 2*, MPPEC: CF, TRN: 33126-00, CMCS97: 97C112, REQ: US - MARKETING, SAFE USE: G
EHS Approval Date: 23JUL2002

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Legally required information is given in accordance with applicable Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user and WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. Nothing is intended as a recommendation for uses which infringe valid patents or as extending any license under valid patents. Appropiate warnings and safe handling procedures should be providedto handlers and users. Use or re-transmission of the information contained herein in any other format than the format as presented is strictly prohibited. Mobil neither represents nor warrants that the format, content or product formulas contained in this document comply with the laws of any other country except the United States of America.

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MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Mallinckrodt CHEMICALS | J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

8. LEAD METAL

8.1 1. Product Identification

Synonyms: Granular lead, pigment metal; C.I. 77575
CAS No.: 7439-92-1
Molecular Weight: 207.19
Chemical Formula: Pb
Product Codes:
J.T. Baker: 2256, 2266
Mallinckrodt: 5668

8.2 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Lead	7439-92-1	95 - 100%	Yes

8.3 3. Hazards Identification

Emergency Overview

POISON! DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. NEUROTOXIN. AFFECTS THE GUM TISSUE, CENTRAL NERVOUS SYSTEM, KIDNEYS, BLOOD AND REPRODUCTIVE SYSTEM. POSSIBLE CANCER HAZARD. MAY CAUSE CANCER BASED ON ANIMAL DATA. Risk of cancer depends on duration and level of exposure.

J.T. Baker SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Life)
Flammability Rating: 0 - None
Reactivity Rating: 0 - None
Contact Rating: 1 - Slight
Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES
Storage Color Code: Blue (Health)

Potential Health Effects

Inhalation:

Lead can be absorbed through the respiratory system. Local irritation of bronchia and lungs can occur and, in cases of acute exposure, symptoms such as metallic taste, chest and abdominal pain, and increased lead blood levels may follow. See also Ingestion.

Ingestion:

POISON! The symptoms of lead poisoning include abdominal pain and spasms, nausea, vomiting, headache. Acute poisoning can lead to muscle weakness, "lead line" on the gums, metallic taste, definite loss of appetite, insomnia, dizziness, high lead levels in blood and urine with shock, coma and death in extreme cases.

Skin Contact:

Lead and lead compounds may be absorbed through the skin on prolonged exposure; the symptoms of lead poisoning described for ingestion exposure may occur. Contact over short periods may cause local irritation, redness and pain.

Eye Contact:

Absorption can occur through eye tissues but the more common hazards are local irritation or abrasion.

Chronic Exposure:

Lead is a cumulative poison and exposure even to small amounts can raise the body's content to toxic levels. The symptoms of chronic exposure are like those of ingestion poisoning; restlessness, irritability, visual disturbances, hypertension and gray facial color may also be noted.

Aggravation of Pre-existing Conditions:

Persons with pre-existing kidney, nerve or circulatory disorders or with skin or eye problems may be more susceptible to the effects of this substance.

8.4 4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:

Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

8.5 5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard. Powder/dust is flammable when heated or exposed to flame.

Explosion:

Not considered to be an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire. Do not allow water runoff to enter sewers or waterways.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Can produce toxic lead fumes at elevated temperatures and also react with oxidizing materials.

8.6 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

8.7 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Areas in which exposure to lead metal or lead compounds may occur should be identified by signs or appropriate means, and access to the area should be limited to authorized persons. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8.8 8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
For lead, metal and inorganic dusts and fumes, as Pb:
-OSHA Permissible Exposure Limit (PEL): 0.05 mg/m3 (TWA)
For lead, elemental and inorganic compounds, as Pb:
-ACGIH Threshold Limit Value (TLV): 0.05 mg/m3 (TWA), A3 animal carcinogen
ACGIH Biological Exposure Indices (BEI): 30 ug/100ml, notation B (see actual Indices for more information).
For lead, inorganic:
-NIOSH Recommended Exposure Limit (REL): 0.1 mg/m3 (TWA)
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded and engineering controls are not feasible, a half-face high efficiency particulate respirator (NIOSH type N100 filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece high efficiency particulate respirator (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Eye Protection:
Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.
Other Control Measures:
Eating, drinking, and smoking should not be permitted in areas where solids or liquids containing lead compounds are handled, processed, or stored. See OSHA substance-specific standard for more information on personal protective equipment, engineering and work practice controls, medical surveillance, record keeping, and reporting requirements. (29 CFR 1910.1025).

8.9 9. Physical and Chemical Properties

Appearance:
Small, white to blue-gray metallic shot or granules.
Odor:
Odorless.
Solubility:
Insoluble in water.
Density:
11.34
pH:
No information found.
% Volatiles by volume @ 21C (70F):
0
Boiling Point:
1740C (3164F)
Melting Point:
327.5C (622F)
Vapor Density (Air=1):
No information found.
Vapor Pressure (mm Hg):
1.77 @ 1000C (1832F)
Evaporation Rate (BuAc=1):
No information found.

8.1010. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
Does not decompose but toxic lead or lead oxide fumes may form at elevated temperatures.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Ammonium nitrate, chlorine trifluoride, hydrogen peroxide, sodium azide, zirconium, disodium acetylide, sodium acetylide and oxidants.

Conditions to Avoid:
Heat, flames, ignition sources and incompatibles.

8.1111. Toxicological Information

Toxicological Data:
Investigated as a tumorigen, mutagen, reproductive effector.
Reproductive Toxicity:
Lead and other smelter emissions are human reproductive hazards. (Chemical Council on Environmental Quality; Chemical Hazards to Human Reproduction, 1981).
Carcinogenicity:
EPA / IRIS classification: Group B2 - Probable human carcinogen, sufficient animal evidence.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Lead (7439-92-1)	No	No	2B

8.1212. Ecological Information

Environmental Fate:
When released into the soil, this material is not expected to leach into groundwater. This material may bioaccumulate to some extent.
Environmental Toxicity:
No information found.

8.1313. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

8.1414. Transport Information

Not regulated.

8.1515. Regulatory Information

--------\Chemical Inventory Status - Part 1\----------

Ingredient	TSCA	EC	Japan	Australia
Lead (7439-92-1)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\----------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Lead (7439-92-1)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Lead (7439-92-1)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\----------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Lead (7439-92-1)	10	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Solid)

WARNING:
THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

Australian Hazchem Code: None allocated.
Poison Schedule: S6
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

8.16 16. Other Information

NFPA Ratings: Health: **3** Flammability: **1** Reactivity: **0**
Label Hazard Warning:
POISON! DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. NEUROTOXIN. AFFECTS THE GUM TISSUE, CENTRAL NERVOUS SYSTEM, KIDNEYS, BLOOD AND REPRODUCTIVE SYSTEM. POSSIBLE CANCER HAZARD. MAY CAUSE CANCER BASED ON ANIMAL DATA. Risk of cancer depends on duration and level of exposure.
Label Precautions:
Do not get in eyes, on skin, or on clothing.
Do not breathe dust.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Label First Aid:
If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.
Product Use:
Laboratory Reagent.
Revision Information:
No Changes.
Disclaimer:
****
Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
****
Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Mallinckrodt CHEMICALS | J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

9. ZINC METAL GRANULAR

9.1 1. Product Identification

Synonyms: Granular zinc; mossy zinc; CI77945; CI Pigment Black 16
CAS No.: 7440-66-6
Molecular Weight: 65.37
Chemical Formula: Zn
Product Codes:
J.T. Baker: 4240, 4244, 4248, 4252, 4260, 4270, 4274
Mallinckrodt: 8693, 8701

9.2 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Zinc	7440-66-6	99 - 100%	Yes
Lead	7439-92-1	0 - 0.1%	Yes

9.3 3. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR. WATER REACTIVE. MAY AFFECT THE GUM TISSUE, CENTRAL NERVOUS SYSTEM, KIDNEYS, BLOOD AND REPRODUCTIVE SYSTEM (lead component).

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Cancer)
Flammability Rating: 2 - Moderate
Reactivity Rating: 2 - Moderate
Contact Rating: 1 - Slight
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: Green (General Storage)

Potential Health Effects

Inhalation:
No adverse effects expected but dust may cause mechanical irritation. The effects may be expected to resemble those of inhaling an inert dust; possible difficulty in breathing, sneezing, coughing. When heated, the fumes are highly toxic and may cause fume fever.
Ingestion:
Extremely large oral dosages may produce gastrointestinal disturbances, due both to mechanical effects and the possibility of reaction with gastric juice to produce zinc chloride. Pain, stomach cramps and nausea could occur in aggravated cases.
Skin Contact:
May cause irritation.
Eye Contact:
May cause irritation.
Chronic Exposure:
No adverse health effects expected.
Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders or impaired respiratory function may be more susceptible to the effects of the substance.

9.4 4. First Aid Measures

Inhalation:
Remove to fresh air. Get medical attention for any breathing difficulty.
Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.
Skin Contact:
Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

9.5 5. Fire Fighting Measures

Fire:
Autoignition temperature: ca. 460C (ca. 860F)
The listed autoignition temperature is for Zinc powder (layer); dust cloud is ca. 680C (1255F). Zinc powder is not pyrophoric but will burn in air at elevated temperatures. Bulk dust in damp state may heat spontaneously and ignite on exposure to air. Releases flammable hydrogen gas upon contact with acids or alkali hydroxides. Contact with strong oxidizers may cause fire.
Explosion:
Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
Fire Extinguishing Media:
Smother with a suitable dry powder (sodium chloride, magnesium oxide, Met-L-X).
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

9.6 6. Accidental Release Measures

Remove all sources of ignition and provide mild ventilation in area of spill. Substance may be pyrophoric and self-ignite. Clean-up personnel require protective clothing, goggles and dust/mist respirators. Sweep or vacuum up the spill in a manner that does not disperse zinc powder in the air and place the zinc in a closed container for recovery or disposal.
US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

9.7 7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

9.8 8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
None for Zinc metal.

-OSHA Permissible Exposure Limit (PEL):
10 mg/m3 (TWA), for zinc oxide fume
-ACGIH Threshold Limit Value (TLV):
10 mg/m3 (TWA), Inhalable fraction, A4 Not classifiable as a human carcinogen for zinc oxide.

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece particulate respirator (NIOSH type N100 filters) may be worn for up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids. glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection:
Wear protective gloves and clean body-covering clothing.
Eye Protection:
Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9.9 9. Physical and Chemical Properties

Appearance:
Gray-blue granular or shiny, irregular lumps.
Odor:
Odorless.
Solubility:
Insoluble in water.
Specific Gravity:
7.14
pH:
No information found.
% Volatiles by volume @ 21C (70F):
0
Boiling Point:
907C (1665F)
Melting Point:
419C (786F)
Vapor Density (Air=1):
No information found.
Vapor Pressure (mm Hg):
1 @ 487C (909F)
Evaporation Rate (BuAc=1):
No information found.

9.1010. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage. Moist zinc dust can react exothermically and ignite spontaneously in air.
Hazardous Decomposition Products:
Hydrogen in moist air, zinc oxide with oxygen at high temperature. Zinc metal, when melted, produces zinc vapor which oxidizes and condenses in air to form zinc fume.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Zinc powder can react violently with water, sulfur and halogens. Dangerous or potentially dangerous with strong oxidizing agents, lower molecular weight chlorinated hydrocarbons, strong acids and alkalis.
Conditions to Avoid:
Heat, flames, ignition sources and incompatibles.

9.1111. Toxicological Information

Zinc: Irritation skin, human: 300 ug/3D-I mild; investigated as a mutagen.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Zinc (7440-66-6)	No	No	None
Lead (7439-92-1)	No	No	2B

9.1212. Ecological Information

Environmental Fate:
No information found.
Environmental Toxicity:
Freshwater Algae:96 Hr EC50 Selenastrum capricornutum: 30 3g/L
Freshwater Fish:96 Hr LC50 Pimephales promelas: 6.4 mg/L
Water Flea Data: 72 Hr EC50 water flea: 5 3g/L
Dangerous to the environment. Very toxic to aquatic organisms; may cause long term adverse effects in the aquatic environment.

9.1313. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

9.1414. Transport Information

Not regulated.

9.1515. Regulatory Information

--------\Chemical Inventory Status - Part 1\----------

Ingredient	TSCA	EC	Japan	Australia
Zinc (7440-66-6)	Yes	Yes	No	Yes
Lead (7439-92-1)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\----------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Zinc (7440-66-6)	Yes	Yes	No	Yes
Lead (7439-92-1)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Zinc (7440-66-6)	No	No	Yes	No
Lead (7439-92-1)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\----------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Zinc (7440-66-6)	1000	No	No
Lead (7439-92-1)	10	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: No Fire: Yes Pressure: No
Reactivity: Yes (Mixture / Solid)

WARNING:
THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

Australian Hazchem Code: None allocated.
Poison Schedule: S6
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

9.16 16. Other Information

NFPA Ratings: Health: **1** Flammability: **1** Reactivity: **1** Other: **Water reactive**
Label Hazard Warning:
WARNING! HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. MAY FORM COMBUSTIBLE DUST CONCENTRATIONS IN AIR. WATER REACTIVE. MAY AFFECT THE GUM TISSUE, CENTRAL NERVOUS SYSTEM, KIDNEYS, BLOOD AND REPRODUCTIVE SYSTEM (lead component).
Label Precautions:
Avoid breathing dust.
Avoid contact with eyes, skin and clothing.
Keep away from heat and flame.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.
Label First Aid:
If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.
Product Use:
Laboratory Reagent.
Revision Information:
MSDS Section(s) changed since last revision of document include: 3, 12.
Disclaimer:
****
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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

FISHER SCIENTIFIC CHEMICAL DIV -- CADIUM NITRATE TETRAHYDRATE -- 6810-00F032009

========== Product Identification ==========

Product ID:CADIUM NITRATE TETRAHYDRATE
MSDS Date:02/12/1993
FSC:6810
NIIN:00F032009
MSDS Number: BSPPR
=== Responsible Party ===
Company Name:FISHER SCIENTIFIC CHEMICAL DIV
Address:1 REAGENT LN
City:FAIR LAWN
State:NJ
ZIP:07410-2802
Country:US
Info Phone Num:201-796-7100/800-388-8355 EXT 5
Emergency Phone Num:201-796-7100/201-796-7523
CAGE:1B464
=== Contractor Identification ===
Company Name:FISHER SCIENTIFIC CO. CHEMICAL MFG DIV
Address:1 REAGENT LANE
Box:City:FAIRLAWN
State:NJ
ZIP:07410-2802
Country:US
Phone:201-796-7100
CAGE:1B464

========== Composition/Information on Ingredients ==========

Ingred Name:CADMIUM (II) NITRATE, TETRAHYDRATE (1:2:4) ACGIH SUSPECTED CARCINOGEN
CAS:10022-68-1
RTECS #:EV1850000
Fraction by Wt: 100%
OSHA PEL:0.05 MG/CUM (CD)
ACGIH TLV:0.01 MG(CD)/CUM

========== Hazards Identification ==========

LD50 LC50 Mixture:ORAL LD50 (RAT):300 MG/KG
Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:INHALATION/INGESTION: TOXIC. SKIN/EYES: IRRITANT. ASPIRATION HAZARD.
Explanation of Carcinogenicity:SEE INGREDIENTS
Effects of Overexposure:VOMITING/CHOKING/SEVERE NAUSEA/ABDOMINAL PAIN/DIARRHEA/TENESMUS/BLURRED VISION/DIZZINESS/HEADACE/MUSCULAR CRAMPS/EXHAUSTION
COLLAPSE/SHOCK/UNCONSCIOUSNESS/RARELY/CONVULSIONS/DEATH. SKIN: DERMATITIS. E YES: CONJUNCTIVITIS. CHRONIC EFFECTS: KIDNEY/LIVER DAMAGE, HEART DISEASE, BLOOD & BONE EFFECTS.
Medical Cond Aggravated by Exposure:KIDNEY OR RESPIRATORY DISORDERS. DEFICIENCIES IN IRON, CALCIUM, ZINC, PROTEINS & VITAMINS C & D.

========== First Aid Measures ==========

First Aid:INHALATION: REMOVE FROM EXPOSURE AREA TO FRESH AIRIMMEDIATELY, IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM/AT REST TREAT SYMPTOMATICALLY/SUPPORTIVELY. EYES: WASH W/WATER FOR 15-20 MINUTES. INGESTION: IF EXTENSIVE VOMITING HAS NOT OCCURED,

SUBSTANCE SHOULD BE REMOVED BY EMESIS/GASTRIC LAVAGE PROVIDED THAT PATIENT IS CONSCIOUS. SKIN: WASH W/PLENTY OF WATER/SOAP.

========== Fire Fighting Measures ==========

Extinguishing Media:WATER. LARGE: FLOOD AREA W/WATER FROM A DISTANCE.
Fire Fighting Procedures:MOVE CONTAINER FROM FIRE AREA/APPLY COOLING WATER TO SIDES OF CONTAINER THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS.
Unusual Fire/Explosion Hazard:NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT. CONTACT W/OXIDIZABLE ORGANIC OR OTHER COMBUSTIBLE MATERIALS MAY RESULT IN IGNITION/VIOLENT COMBUSTION/EXPLOSION.

========== Accidental Release Measures ==========

Spill Release Procedures:KEEP COMBUSTIBLES (WOOD, PAPER, OIL, ETC) AWAY FROM SPILLED MATERIAL, DO NOT TOUCH SPILLED MATERIAL, FOR SMALL DERY SPILLS, W/CLEAN SHOVEL PLACE MATERIAL INTO CLEAN, DRY CONTAINER & COVER, MOVE CONTAI NERS FROM SPILL AREA. SEE SUPP.

========== Handling and Storage ==========

Handling and Storage Precautions:STORE AWAY FROM INCOMPATIBLE SUBSTANES. KEEP IN A TIGHTLY CLOSED CONTAINER. STORE IN A COOL, DRY VENTILATED AREA.
Other Precautions:CONSULT NFPA PUBLICATION 43A STORAGE OF LIQUID & SOLID OXIDIZING MATERIALS FOR STORAGE REUIREMENTS.

========== Exposure Controls/Personal Protection ==========

Respiratory Protection:SELF CONTAINED BREATHING APPARATUS W/FULL FACEPIECE/SUPPLIED-AIR RESPIRATOR W/FULL FACEPIECE
Ventilation:LOCAL EXHAUST
Protective Gloves:REQUIRED
Eye Protection:SPLASH-PROOF/DUST RESISTANT GOGGLES
Other Protective Equipment:EYE WASH, SHOWER, IMPERVIOUS CLOTHING
Work Hygienic Practices:REMOVE CONTAMINATED CLOTHING & SHOES
Supplemental Safety and Health
LARGE SPILLS: DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. KEEP UNNECESSSARY PEOPLE AWAY. ISOLATE HAZARD AREA & DENY ENTRY. PRODUCT IS HYGROSCOPIC. SOLVENT SOLUBILITY: SOLUBLE IN ALCOHOL, AMMONIA, ACET ONE, ETHYL ACETATE; INSOLUBLE IN CONCENTRATED NITRIC ACID.

========== Physical/Chemical Properties ==========

Boiling Pt:B.P. Text:270F/132C
Melt/Freeze Pt:M.P/F.P Text:139F/59C
Spec Gravity:2.455
Solubility in Water:COMPLETE
Appearance and Odor:WHITE, PRISMS, NEEDLES, CRYSTAL/FLAKES W/NO ODOR

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid:YES
CADMIUM NITRATE, OTHER METAL NITRATES & COMBUSTIBLE MATERIALS
Hazardous Decomposition Products:OXIDES OF CADMIUM & NITROGEN

========== Disposal Considerations ==========

Waste Disposal Methods:DISPOSE OF AS HAZARDOUS WASTE IN ACCORDANCE W/FEDERAL, STATE & LOCAL REGULATIONS.

Material Safety Data Sheet
Nickel Metal

ACC# 16240

Section 1 - Chemical Product and Company Identification

MSDS Name: Nickel Metal
Catalog Numbers: S80102, S80102-1, S801021, S93310, N40 500, N40-500, N40500
Synonyms:
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7440-02-0	NICKEL	100.0	231-111-4

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white to gray white solid.
Caution! May cause allergic skin reaction. May cause eye irritation. May cause respiratory tract irritation. May cause cancer in humans. May cause liver and kidney damage.
Target Organs: Kidneys, liver, respiratory system.

Potential Health Effects
Eye: May cause eye irritation.
Skin: May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. May cause severe irritation and possible burns. May cause dermatitis.
Ingestion: Causes gastrointestinal irritation with nausea, vomiting and diarrhea.
Inhalation: Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. Inhalation of a mist of this material may cause respiratory tract irritation. Breathing Nickel (Dust and Fume) can cause a sore or hole in the "bone" (septum) dividing the inner nose.
Chronic: Prolonged or repeated skin contact may cause sensitization dermatitis and possible destruction and/or ulceration. May cause respiratory tract cancer.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin: Get medical aid if irritation develops or persists. Wash clothing before reuse. Flush skin with plenty of soap and water.
Ingestion: If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.
Notes to Physician: Treat symptomatically and supportively.
Antidote: There exists several chelation agents. The determination of there use should be made only by qualified medical personnel.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Dusts at sufficient concentrations can form explosive mixtures with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Dust can be an explosion hazard when exposed to heat or flame.
Extinguishing Media: Confining and smothering is preferable to applying water. DO NOT USE WATER, CO2, OR FOAM DIRECTLY ON FIRE ITSELF. Use DRY sand, sodium chloride powder, graphite powder, copper powder or Lith-X powder. Dousing metallic fires with water may generate hydrogen gas, an extremely dangerous explosion hazard, particularly if fire is in a confined environment.
Flash Point: Not applicable.
Autoignition Temperature: Not applicable.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 3; Flammability: 1; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Very fine particles can cause a fire or explosion. Eliminate all ignition sources. Reduce airborne dust and prevent scattering by moistening with water. Sweep up, then place into a suitable container for disposal. Carefully scoop up and place into appropriate disposal container. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Avoid ingestion and inhalation.
Storage: Store in a cool, dry, well-ventilated area away from incompatible substances. Keep containers tightly closed.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
NICKEL	1.5 mg/m3 TWA (inhalable fraction)	0.015 mg/m3 TWA 10 mg/m3 IDLH	1 mg/m3 TWA

OSHA Vacated PELs: NICKEL: 1 mg/m3 TWA

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to minimize contact with skin.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: white to gray white

Odor: none reported

pH: Not available.

Vapor Pressure: 1 mm Hg @ 1810 C

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not applicable.

Boiling Point: 2730 deg C

Freezing/Melting Point:1455 deg C

Decomposition Temperature: Not available.

Solubility: Insoluble in water.

Specific Gravity/Density:8.90

Molecular Formula: Ni

Molecular Weight:58.69

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Incompatible materials, dust generation.

Incompatibilities with Other Materials: Acids, aluminum, ammonia, ammonium nitrate, bromine pentafluoride, ethylene + aluminum, dioxane, fluorine, hydrazine, hydrazoic acid, hydrogen, methanol, nitric acid, nitryl fluoride, organic solvents, oxidants, phosphorus, potassium perchlorate, selenium, sulfur and compounds.

Hazardous Decomposition Products: Toxic and highly flammable nickel carbonyl.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 7440-02-0: QR5950000; QR6126100; QR6555000; QR7120000
LD50/LC50:
Not available.

Carcinogenicity:
CAS# 7440-02-0:

- **ACGIH:** Not listed.
- **California:** carcinogen, initial date 10/1/89
- **NTP:** Suspect carcinogen
- **IARC:** Group 1 carcinogen (listed as Nickel compounds).

Epidemiology: Epidemiological studies have shown an increased incidence of cancers among nickel refinery workers.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.
Environmental: No information reported.
Physical: No information available.
Other: None.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated as a hazardous material	No information available.
Hazard Class:		
UN Number:		

Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 7440-02-0 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 7440-02-0: 100 lb final RQ (no reporting of releases of this hazardous substance is require
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 7440-02-0: immediate, delayed, fire.
Section 313
This material contains NICKEL (CAS# 7440-02-0, 100.0%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
CAS# 7440-02-0 (listed as Nickel compounds) is listed as a hazardous a ir pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA. CAS# 7440-02-0 is listed as a Priority Pollutant under the Clean Water Act. CAS# 7440-02-0 is listed as a Toxic Pollutant under the Clean Water Act.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 7440-02-0 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65
The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:
WARNING: This product contains NICKEL, a chemical known to the state of California to cause cancer.
California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols:
XN
Risk Phrases:
R 40 Limited evidence of a carcinogenic effect.
R 43 May cause sensitization by skin contact.

Safety Phrases:

Material Safety Data Sheet
Chromium

ACC# 05000

Section 1 - Chemical Product and Company Identification

MSDS Name: Chromium
Catalog Numbers: S79965, S79965-1, S799651, S93176, S79965-2, S799652
Synonyms: Chrome
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7440-47-3	CHROMIUM	>=99%	231-157-5

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: silver-gray solid.
Warning! Causes eye and skin irritation. May cause allergic skin reaction. Causes severe respiratory tract irritation. May cause lung damage. May cause kidney damage. May cause liver damage.
Target Organs: Liver.

Potential Health Effects
Eye: Causes eye irritation. May cause conjunctivitis.
Skin: Causes skin irritation. Prolonged and/or repeated contact may cause irritation and/or dermatitis. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.
Ingestion: May cause irritation of the digestive tract. May cause liver damage.
Inhalation: Causes respiratory tract irritation. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. May cause asthma and shortness of breath. May cause headache, coughing, fever, weight loss, and pneumoconiosis.
Chronic: Prolonged inhalation may cause respiratory tract inflammation and lung damage.

Section 4 - First Aid Measures

Material Safety Data Sheet
Chromium

ACC# 05000

Section 1 - Chemical Product and Company Identification

MSDS Name: Chromium
Catalog Numbers: S79965, S79965-1, S799651, S93176, S79965-2, S799652
Synonyms: Chrome
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7440-47-3	CHROMIUM	>=99%	231-157-5

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: silver-gray solid.
Warning! Causes eye and skin irritation. May cause allergic skin reaction. Causes severe respiratory tract irritation. May cause lung damage. May cause kidney damage. May cause liver damage.
Target Organs: Liver.

Potential Health Effects
Eye: Causes eye irritation. May cause conjunctivitis.
Skin: Causes skin irritation. Prolonged and/or repeated contact may cause irritation and/or dermatitis. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.
Ingestion: May cause irritation of the digestive tract. May cause liver damage.
Inhalation: Causes respiratory tract irritation. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. May cause asthma and shortness of breath. May cause headache, coughing, fever, weight loss, and pneumoconiosis.
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Target Organs: Liver.

Potential Health Effects
Eye: Causes eye irritation. May cause conjunctivitis.
Skin: Causes skin irritation. Prolonged and/or repeated contact may cause irritation and/or dermatitis. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.
Ingestion: May cause irritation of the digestive tract. May cause liver damage.
Inhalation: Causes respiratory tract irritation. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. May cause asthma and shortness of breath. May cause headache, coughing, fever, weight loss, and pneumoconiosis.
Chronic: Prolonged inhalation may cause respiratory tract inflammation and lung damage.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin: Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Wash clothing before reuse.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: Evacuate area and fight fire from a safe distance. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. May burn with invisible flame. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Dust can be an explosion hazard when exposed to heat or flame. Finely divided dusts may exhibit pyrophoric tendancies.
Extinguishing Media: Use dry sand or earth to smother fire. Use dry chemical to fight fire. Contact professional fire-fighters immediately.
Flash Point: Not applicable.
Autoignition Temperature: 752 deg F (400.00 deg C)
Explosion Limits, Lower:.0230oz/ft3
Upper: Not available.
NFPA Rating: (estimated) Health: 2; Flammability: 1; Instability: 1

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Avoid generating dusty conditions. Remove all sources of ignition. Isolate area and deny entry. Place under an inert atmosphere. Do not use combustible materials such as paper towels to clean up spill.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Use spark-proof tools and explosion proof equipment. Avoid contact with skin and eyes. Keep container tightly closed. Keep away from heat, sparks and flame. Avoid ingestion and inhalation. Handle under an inert atmosphere.
Storage: Keep away from heat, sparks, and flame. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from acids. Keep containers tightly closed. Do not expose to air. Store under an inert atmosphere.

S 22 Do not breathe dust.
S 36 Wear suitable protective clothing.

WGK (Water Danger/Protection)

CAS# 7440-02-0: No information available.

Canada - DSL/NDSL

CAS# 7440-02-0 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 7440-02-0 is listed on the Canadian Ingredient Disclosure List.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
CHROMIUM	0.5 mg/m3 TWA	0.5 mg/m3 TWA 250 mg/m3 IDLH	1 mg/m3 TWA

OSHA Vacated PELs: CHROMIUM: 1 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid
Appearance: silver-gray
Odor: odorless
pH: Not available.
Vapor Pressure: Not applicable.
Vapor Density: Not available.
Evaporation Rate: Not applicable.
Viscosity: Not applicable.
Boiling Point: 4784 deg F
Freezing/Melting Point:3375 deg F
Decomposition Temperature: Not available.
Solubility: Insoluble in water.
Specific Gravity/Density:7.2 @28C
Molecular Formula: Cr
Molecular Weight:51.996

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, ignition sources, dust generation, exposure to air, acids, strong oxidants.
Incompatibilities with Other Materials: Ammonium nitrate, hydrogen peroxide, lithium, nitric oxiode, potassium chlorate, sulfuri dioxide, strong oxidizers, hydrochloric acid, sulfuric acid, nitrogen oxide,

Hazardous Decomposition Products: Toxic chromium oxide fumes.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 7440-47-3: GB4200000
LD50/LC50:
Not available.

Carcinogenicity:
CAS# 7440-47-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: Certain hexavalent chromium compounds have been demonstrated to be carcinogenic on the basis of epidemiological investigations on workers and experimental studies in animals.Increased incidences of respiratory cancer have been found in chromium (VI) workers.There is an increased incidence of lung cancer in industrial workers exposed to chromium (VI) compounds. Please refer to IARC volume 23 for a more detailed discussion.IARC Group 3: Suspected animal carcinogenic substance of potential relevance to humans.IARC Group 3: Limited or insufficient evidence for carcinogenicity in both animals and humans.
Teratogenicity: No information found
Reproductive Effects: No information found
Mutagenicity: No information found
Neurotoxicity: No information found
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Please contact Fisher Scientific for shipping information	No information available.
Hazard Class:		
UN Number:		

Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 7440-47-3 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 7440-47-3: 5000 lb final RQ (no reporting of releases of this hazardous substance is requir
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 7440-47-3: immediate, delayed, fire.
Section 313
This material contains CHROMIUM (CAS# 7440-47-3, >=99%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
CAS# 7440-47-3 (listed as Chromium compounds) is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA. CAS# 7440-47-3 is listed as a Priority Pollutant under the Clean Water Act. CAS# 7440-47-3 is listed as a Toxic Pollutant under the Clean Water Act.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 7440-47-3 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
XN
Risk Phrases:
R 40 Limited evidence of a carcinogenic effect.

Safety Phrases:

WGK (Water Danger/Protection)
CAS# 7440-47-3: No information available.

Canada - DSL/NDSL

CAS# 7440-47-3 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D2A, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 7440-47-3 is listed on the Canadian Ingredient Disclosure List.

10. COPPER METAL

10.11. Product Identification

Synonyms: C.I. 77400; Arwood Copper
CAS No.: 7440-50-8
Molecular Weight: 63.546
Chemical Formula: Cu
Product Codes:
J.T. Baker: 1714, 1720, 1732, 1736
Mallinckrodt: 1733, 4649

10.22. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Copper	7440-50-8	90 - 100%	Yes

10.33. Hazards Identification

Emergency Overview

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS THE LIVER AND KIDNEYS. CHRONIC EXPOSURE MAY CAUSE TISSUE DAMAGE.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Life)
Flammability Rating: 1 - Slight
Reactivity Rating: 2 - Moderate
Contact Rating: 1 - Slight
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: Green (General Storage)

Potential Health Effects

Inhalation:
Inhalation of dusts and fumes of metallic copper causes irritation of the upper respiratory tract, congestion of nasal mucous membranes, ulceration and perforation of the nasal septum, and pharyngeal congestion. Inhalation of copper fumes may give rise to metal fume fever (high temperature, metallic taste, nausea, coughing, general weakness, muscle aches, and exhaustion).
Ingestion:
Copper ingestion causes nausea, vomiting, abdominal pain, metallic taste, and diarrhea. Ingestion of large doses may cause stomach and intestine ulceration, jaundice, and kidney and liver damage.
Skin Contact:
Causes irritation to skin. Symptoms include redness, itching, and pain. Exposure to copper dust may cause a greenish-black skin discoloration.
Eye Contact:
Small copper particles in the eyes may cause irritation, discoloration, and damage.
Chronic Exposure:
Prolonged or repeated exposure to copper can discolor skin and hair and irritate the skin; may cause mild dermatitis, runny nose, and irritation of the mucous membranes. Repeated ingestion may damage the liver and kidneys. Repeated inhalation can cause chronic respiratory disease.
Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders or impaired liver, kidney, or pulmonary function or pre-existing Wilson's disease may be more susceptible to the effects of this material.

10.44. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.
Skin Contact:
Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

10.55. Fire Fighting Measures

Fire:
Not considered to be a fire hazard since the bulk solid does not burn, but very finely divided particles (ultra-fine powder) may burn in air.
Explosion:
Not considered to be an explosion hazard. Reactions with incompatibles may pose an explosion hazard. Liquid copper explodes on contact with water. High concentrations of finely divided copper particles in the air may present an explosion hazard.
Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

10.66. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

10.77. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Avoid exposure to air and moisture. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

10.88. Exposure Controls/Personal Protection

Airborne Exposure Limits:
Copper Dust and Mists, as Cu:
- OSHA Permissible Exposure Limit (PEL) -
1 mg/m3 (TWA)
- ACGIH Threshold Limit Value (TLV) -
1 mg/m3 (TWA)
Copper Fume:
- OSHA Permissible Exposure Limit (PEL) -
0.1 mg/m3 (TWA)
- ACGIH Threshold Limit Value (TLV) -
0.2 mg/m3 (TWA)
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece particulate respirator (NIOSH type N100 filters) may be worn for up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids. glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Eye Protection:
Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

10.99. Physical and Chemical Properties

Appearance:
Reddish, metallic solid.
Odor:
Odorless.
Solubility:
Insoluble in water.
Density:
8.94
pH:
No information found.
% Volatiles by volume @ 21C (70F):
0
Boiling Point:
2595C (4703F)
Melting Point:
1083C (1981F)
Vapor Density (Air=1):
Not applicable.
Vapor Pressure (mm Hg):
1 @ 1628C (2962F)
Evaporation Rate (BuAc=1):
No information found.

10.1010. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage. Copper becomes dull when exposed to air; on exposure to moist air it gradually converts to the carbonate. On long standing, a white, highly explosive peroxide deposit may form.
Hazardous Decomposition Products:
No information found.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Copper is incompatible with oxidizers, alkalis, acetylene, chlorine plus oxygen difluoride, phosphorus, nitric acid, potassium peroxide, 1-bromo-2-propyne, sulfur plus chlorates. Reacts violently with ammonium nitrate, bromates, iodates, chlorates, ethylene oxide, hydrozoic acid, potassium oxide, dimethyl sulfoxide plus trichloroacetic acid, hydrogen peroxide, sodium peroxide, sodium azide, sulfuric acid, hydrogen sulfide plus air, and lead azide. A potentially explosive reaction occurs with actylenic compounds. Copper ignites on contact with chlorine, fluorine (above 121C), chlorine trifluoride, and hydrazinum nitrate (above 70C). An incandescent reaction occurs with potassium dioxide.
Conditions to Avoid:
Incompatibles and prolonged exposure to air and moisture.

10.1111. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure. Investigated as a tumorigen and a reproductive effector.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Copper (7440-50-8)	No	No	None

10.1212. Ecological Information

Environmental Fate:
No information found.

Environmental Toxicity:
No information found.

10.1313. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

10.1414. Transport Information

Not regulated.

10.1515. Regulatory Information

--------\Chemical Inventory Status - Part 1\---------

Ingredient	TSCA	EC	Japan	Australia
Copper (7440-50-8)	Yes	Yes	No	Yes

--------\Chemical Inventory Status - Part 2\---------

		--Canada--		
Ingredient	Korea	DSL	NDSL	Phil.
Copper (7440-50-8)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\---------

	-SARA 302-		------SARA 313------	
Ingredient	RQ	TPQ	List	Chemical Catg.
Copper (7440-50-8)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\---------

		-RCRA-	-TSCA-
Ingredient	CERCLA	261.33	8(d)
Copper (7440-50-8)	5000	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

10.1616. Other Information

NFPA Ratings: Health: **2** Flammability: **0** Reactivity: **0**
Label Hazard Warning:
WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS THE LIVER AND KIDNEYS. CHRONIC EXPOSURE MAY CAUSE TISSUE DAMAGE.
Label Precautions:
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.
Avoid breathing dust or vapors.
Keep container closed.
Use only with adequate ventilation.

Label First Aid:
If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

Product Use:
Laboratory Reagent.

Revision Information:
MSDS Section(s) changed since last revision of document include: 3.

========== Product Identification ==========

Product ID:AMERICIUM 241 CELL MODULE FOR THE M43A1 DET
MSDS Date:04/18/1984
FSC:6665
NIIN:01-105-5623
MSDS Number: BRMGQ
=== Responsible Party ===
Company Name:BRUNSWICK CORP,DEFENSE DIV
Address:2000 BRUNSWICK LANE
City:DELAND
State:FL
ZIP:32724
Country:US
Info Phone Num:904-736-8460
Emergency Phone Num:904-738-1001
Preparer's Name:PHILLIP M. EDWARDS
CAGE:52973
=== Contractor Identification ===
Company Name:BRUNSWICK CORP,DEFENSE DIV
Address:2000 BRUNSWICK LANE
Box:City:DELAND
State:FL
ZIP:32724
Country:US
Phone:904-738-1001
CAGE:52973

========== Composition/Information on Ingredients ==========

Ingred Name:AMERICIUM 241 250 UCI.
Other REC Limits:NONE RECOMMENDED

========== Hazards Identification ==========

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES
Reports of Carcinogenicity:NTP:UNKNOWN IARC:UNKNOWN OSHA:NO
Health Hazards Acute and Chronic:ACUTE: MAY CAUSE RADIATION BURNS, CATARACTS. CHRONIC: MAY CAUSE CANCER. THE LOW LEVEL OF RADIATION ENVOLVED IS UNLIKELY TO CAUSE SIGNIFIGANT HEALTH PROBLEMS EXCEPT IN EXTREME OR UNUSUAL CONDITIONS.
Explanation of Carcinogenicity:RADIOACTIVES ARE KNOWN CARCINOGENS.
Effects of Overexposure:REDDENING OF SKIN, BURNS, BLURRING OF VISION, HAIR LOSS, NAUSEA, VOMITING.

========== First Aid Measures ==========

First Aid:INHALATION: REMOVE TO FRESH AIR. EYES: FLUSH WITH WATER FOR 15 MINUTES. SKIN: REMOVE CONTAMINATED CLOTHING. WASH WITH SOAP AND WATER. INGESTION: DO NOT INDUCE VOMITING. IN ALL CASES GET IMMEDIATE MEDI CAL ATTENTION. ALWAYS NOTIFY RECEIVING MEDICAL FACILITY OF POSSIBLE RADIOACTIVE CONTAMINATION OF VICTIM.

========== Fire Fighting Measures ==========

Extinguishing Media:USE MAEDIA APPROPRIATE FOR SURROUNDING FIRE.
Fire Fighting Procedures:WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE GEAR. STAY UPWIND TO PREVENT POSSIBLE CONTAMINATION FROM RADIOACTIVE MATERIAL.
Unusual Fire/Explosion Hazard:CONTAINS A RADIOACTIVE MATERIAL WHICH IF RELEASED TO ENVIRONMENT POSES A CONTAMINATION HAZARD; LOW HEALTH RISK.

========== Accidental Release Measures ==========

Spill Release Procedures:NOTIFY RADIATION SAFETY OFFICE. ISOLATE AREA. DENY ENTRY. WEAR PROPER PROTECTIVE CLOTHING. SWEEP UP MATERIAL AND PLACE IN A DOT APPROVED CONTAINER FOR LATER DISPOSAL. ENSURE AREA IS FREE OF RADIOACTIV E CONTAMINATION PRIOR TO RELEASE OF SPILL AREA.
Neutralizing Agent:NONE

========== Handling and Storage ==========

Handling and Storage Precautions:PROTECT FROM PHYSICAL DAMAGE.
Other Precautions:NONE NORMALLY REQUIRED.

========== Exposure Controls/Personal Protection ==========

Respiratory Protection:NONE NORMALLY REQUIRED. IF DEVICE IS BROKEN, USE NIOSH/MSHA APPROVED RESPIRATOR WITH HEPA FILTER OR IF INVOLVED IN A FIRE USE SELF-CONTAINED BREATHING APPARATUS.
Ventilation:NONE NORMALLY REQUIRED.
Protective Gloves:RUBBER IF DEVICE BROKEN; OTHERWISE NONE
Eye Protection:SAFETY GLASSES IF DEVICE IS BROKEN
Other Protective Equipment:IMPERVIOUS CLOTHING IF DEVICE IS BROKEN; OTHERWISE NONE NORMALLY REQUIRED.
Work Hygienic Practices:WASH HANDS AFTER USE AND BEFORE EATING, DRINKING, OR SMOKING.
Supplemental Safety and Health
MFR/ARMY MSDS OF LITTLE VALUE. HMIS TECHNICIAN USED "PATTY'S" AND "SIGMA-ALDRICH" TO SUPPLEMENT DATA. MSDS HEALTH EFFECTS ARE WORSE CASE IN THE EVENT DEVICE IS BROKEN OR INVOLVED IN A FIRE. IN NORMAL USE THERE IS LITTLE DANGER TO SAFETY AND HEALTH DUE TO THE MINUTE AMOUNT OF RADIOACTIVE INVOLVED.

========== Physical/Chemical Properties ==========

HCC:A2
Solubility in Water:NEGLIGIBLE
Appearance and Odor:CHEMICAL AGENT ALARM CONTAINS DETECTOR CELL CONTAINING AM-241.

========== Stability and Reactivity Data ==========

Stability Indicator/Materials to Avoid:YES
NONE SPECIFIED BY MANUFACTURER.
Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.
Hazardous Decomposition Products:NONE SPECIFIED BY MANUFACTURER.

========== Disposal Considerations ==========

Waste Disposal Methods:DISPOSE OF IN ACCORDANCE WITH TITLE 10 CODE OF FEDERAL REGULATIONS, DOD REGULATIONS, AND APPLICABLE STATE REGULATIONS FOR THE DISPOSAL OF RADIOACTIVE MATERIALS.

ATTACHMENT C
(FLD OPS)

SAFETY PROCEDURES/FIELD OPERATING PROCEDURES

* SEE SAFETY OFFICERS FIELD MANUAL

ATTACHMENT D

HAZARD COMMUNICATION PROGRAM

SITE-SPECIFIC HAZARD COMMUNICATION PROGRAM

Location-Specific Hazard Communication Program/Checklist

To ensure an understanding of and compliance with the Hazard Communication Standard, WESTON will use this checklist/document (or similar document) in conjunction with the WESTON Written Hazard Communication Program as a means of meeting site- or location-specific requirements.

While responsibility for activities within this document reference the WESTON Safety Officer (SO), it is the responsibility of all personnel to effect compliance. Responsibilities under various conditions can be found within the WESTON Written Hazard Communication Program.

To ensure that information about the dangers of all hazardous chemicals used by WESTON are known by all affected employees, the following Hazard Communication Program has been established. All affected personnel will participate in the Hazard Communication Program. This written program, as well as WESTON's Corporate Hazard Communication Program, will be available for review by any employee, employee representative, representative of OSHA, NIOSH, or any affected employer/employee on a multi-employer site.

☒ Site or other location name/address: Matthiessen and Hegeler Zinc Company (M&H) Site

☒ Site/Project/Location Manager: Shamille Lewis or designated alternate

☒ Site/Location Safety Officer: Shamille Lewis or designated alternate

☒ List of chemicals compiled, format: ☒ HASP ☐ Other: _____

☒ Location of MSDS files: HASP

☐ Training conducted by: Name: _____ Date: _____

☐ Indicate format of training documentation: ☐ Field Log: ☐ Other: _____

☐ Client briefing conducted regarding hazard communication: _____

☐ If multi-employer site (client, subcontractor, agency, etc.), indicate name of affected companies:

_____

☐ Other employer(s) notified of chemicals, labeling, and MSDS information: _____

☐ Has WESTON been notified of other employer's or client's hazard communication program(s), as necessary? ☐ Yes ☐ No

List of Hazardous Chemicals

A list of known hazardous chemicals used by WESTON personnel must be prepared and attached to this document or placed in a centrally identified location with the MSDSs. Further information on each chemical may be obtained by reviewing the appropriate MSDS. The list will be arranged to enable cross-reference with the MSDS file and the label on the container. The SO or Location Manager is responsible for ensuring the chemical listing remains up-to-date.

Container Labeling

The WESTON SO will verify that all containers received from the chemical manufacturer, importer, or distributor for use on-site are clearly labeled.

The SO is responsible for ensuring that labels are placed where required and for comparing MSDSs and other information with label information to ensure correctness.

Material Safety Data Sheets (MSDSs)

The SO is responsible for establishing and monitoring WESTON's MSDS program for the location. The SO will ensure that procedures are developed to obtain the necessary MSDSs and will review incoming MSDSs for new or significant health and safety information. He/she will see that any new information is passed on to the affected employees. If an MSDS is not received at the time of initial shipment, the SO will call the manufacturer and have an MSDS delivered for that product in accordance with the requirements of WESTON's Written Hazard Communication Program.

A log for, and copies of, MSDSs for all hazardous chemicals in use will be kept in the MSDS folder at a location known to all site workers. MSDSs will be readily available to all employees during each work shift. If an MSDS is not available, immediately contact the WESTON SO or the designated alternate. When a revised MSDS is received, the SO will immediately replace the old MSDS.

Employee Training and Information

The SO is responsible for the WESTON site-specific personnel training program. The SO will ensure that all program elements specified below are supplied to all affected employees.

At the time of initial assignment for employees to the work site, or whenever a new hazard is introduced into the work area, employees will attend a health and safety meeting or briefing that includes the information indicated below.

- Hazardous chemicals present at the work site.
- Physical and health risks of the hazardous chemicals.
- The signs and symptoms of overexposure.
- Procedures to follow if employees are overexposed to hazardous chemicals.
- Location of the MSDS file and Written Hazard Communication Program.
- How to determine the presence or release of hazardous chemicals in the employee's work area.
- How to read labels and review MSDSs to obtain hazard information.
- Steps WESTON has taken to reduce or prevent exposure to hazardous chemicals.
- How to reduce or prevent exposure to hazardous chemicals through the use of controls procedures, work practices, and personal protective equipment.
- Hazardous, nonroutine tasks to be performed (if any).
- Chemicals within unlabeled piping (if any).

Hazardous Nonroutine Tasks

When employees are required to perform hazardous nonroutine tasks, the affected employee(s) will be given information by the SO about the hazardous chemicals he or she may use during such activity. This information will include specific chemical hazards, protective and safety measures the employee can use, and steps WESTON is using to reduce the hazards. These steps include, but are not limited to, ventilation, respirators, presence of another employee, and emergency procedures.

Chemicals in Unlabeled Pipes

Work activities may be performed by employees in areas where chemicals are transferred through unlabeled pipes. Prior to starting work in these areas, the employee will contact the SO, at which time information as to the chemical(s) in the pipes, potential hazards of the chemicals or the process involved, and the safety precautions that should be taken will be determined and presented.

Multi-Employer Work Sites

It is the responsibility of the SO to provide other employers with information about hazardous chemicals imported by WESTON to which their employees may be exposed, along with suggested safety precautions. It is also the responsibility of the SO and the Site Manager to obtain information about hazardous chemicals used by other employers to which WESTON employees may be exposed. WESTON's chemical listing will be made available to other employers, as requested. MSDSs will be available for viewing, as necessary.

The location, format, and/or procedures for accessing MSDS information must be relayed to affected employees.

ATTACHMENT E
AIR SAMPLING DATA SHEETS

SITE AIR MONITORING PROGRAM

Field Data Sheets

Location:

% LEL	% O_2	PID (units)	FID (units)	Aerosol Monitor (mg/m^3)	GM: Shield Probe/ Thin Window		NaI (uR/hr)	ZnS (cpm)
					mR/hr	cpm		
Monitox (ppm)				**Detector Tube(s)**				
Sound Levels (dBA)		**Illumination**	**pH**	**Other**	**Other**	**Other**	**Other**	**Other**

Location:

% LEL	% O_2	PID (units)	FID (units)	Aerosol Monitor (mg/m^3)	GM: Shield Probe/ Thin Window		NaI (uR/hr)	ZnS (cpm)
					mR/hr	cpm		
Monitox (ppm)				**Detector Tube(s)**				
Sound Levels (dBA)		**Illumination**	**pH**	**Other**	**Other**	**Other**	**Other**	**Other**

AIR MONITORING/SAMPLING DATA LOG

Client:	W.O. No.:	Sample No.:
Address:	Sampled By:	Date:

Employee and Location Information

Employee Name:	Employee No.:	Job Title:

Respirator	☐ APR ☐ ½ Mask ☐ Full Face ☐ PAPR ☐ ½ Mask ☐ Full Face ☐ Hood ☐ SAR ☐ ½ Mask ☐ Full Face ☐ Hood ☐ SCBA	Manufacturer:	Cartridge Type:

PPE: ☐ Hard Hat ☐ HPD ☐ Gloves ☐ Safety Shoes ☐ Coveralls ☐ Other:

Sampling Data

Sampling Type: ☐ Personal ☐ TWA ☐ STEL ☐ Area ☐ Source ☐ Full Shift ☐ Partial Shift ☐ Grab	Media:	Pump Type/Serial No.: /
Calibrator/Serial No.: /	Pre-Calibration: 1. 2. 3. avg-pre:	Post-Calibration: 1. 2. 3. avg-post:

Start Time:	Restart Time:	Restart Time:	Avg. Flowrate:	% Change:
1st Stop Time:	2nd Stop Time:	3rd Stop Time:	Total Time:	Volume:

Multiple Samples for this TWA: ☐ Yes ☐ No	Multiple Chemical Exposures: ☐ Yes ☐ No	Exposure Time: ☐ Normal ☐ Worst Case

Sampling Conditions

Weather Conditions: Temp: R.H: B.P.: Other:

Engineering Controls:

Substances Evaluated

Substance	Result	Substance	Result	Substance	Result

Observations and Comments

QA by: **Date:**

ATTACHMENT F
INCIDENT REPORTING

CLICK HERE FOR LATEST NOI FORM

Questions can be directed to: Susan Hipp-Ludwick, 610.701.3046

Matt Dillon, 610.701.7413

ATTACHMENT G
AHA CHECKLIST AND ENV. COMPLIANCE

HAZARD CHECKLIST Site Manager/EHS Officer: Shamille Lewis

Date:

Location: Lasalle, IL

Address:

Task Team (name or reference via daily sign-in sheet)

HAZARDS IDENTIFIED (check those applicable)

	Chemical		Biological		Physical		Aerial lifts		Remote Areas
☐	Flammable/combustible	☒	Insects	☒	Noise	☐	Man. Material Handling	☒	Materials handling
☐	Corrosive	☒	Animals	☐	Heat	☐	Demolition	☐	High Pressure Washers
☐	Oxidizer	☒	Plants	☒	Cold	☐	Excavation	☒	Hand and Power Tools
☐	Reactive	☐	Mold/Fungus	☒	Inclement Weather	☐	Pile Driving	☐	Low Illumination
☐	Toxic	☐	Viral/Bacterial	☐	Hot Work	☐	Welding/Cutting/Burn	☐	Drilling & Boring
☒	Inhalation	☐	Density Gauges	☐	Confined Spaces	☐	Hot Surfaces	☐	Striking against/Struck-by
☒	Eyes/Skin	☐	Radiological	☐	Stored hazardous Energy	☐	Hot Materials	☐	Caught-in/Caught between
☐	Pesticides	☐	Ultra-Violet	☐	Elevation	☐	Rough Terrain	☒	Pushing/pulling
☐	Carcinogen	☒	Sunlight	☐	Utilities	☐	Compressed Gases	☒	Falls at same level
☐	Asbestos	☐	Infrared	☐	Machinery	☐	Hazardous Mat. Storage	☐	Falls from elevation
☒	Lead	☐	Lasers	☐	Mobile equipment	☐	Diving	☒	Repetitive motion
☐	UXO/OE/ CWM	☐	XRF	☐	Cranes	☐	Operation of Boats	☐	High (>110v) Electricity
☐	Process Safety	☐	Isotopes	☐	Manual Material Handling	☐	Working Over Water	☒	Slippery surface Ice/Snow
☐	Applying Paint/Coatings	☐		☐	Ladders	☒	Traffic	☐	
☐		☐		☐	Scaffolding	☒	Site Security	☐	

REQUIRED PROTECTION (check those applicable)

	Engineering Controls		Administrative Control		PPE				Contingency
☐	Guard Rails	☒	Qualified for task	☐	Air Supplying Respirator	☐	Tyvek coveralls	☒	Emergency Signal Known
☐	Machine Guards	☒	Trained/Certified	☐	Air Purifying Respirator	☐	Coated Coveralls	☐	Eye wash/shower Location
☐	Sound Barriers	☐	Hot Work Permit	☐	SCBA	☐	Welding leathers	☒	First Aid Kit Location
☐	Enclosure	☐	CSE Permit	☒	Hard Hat	☐	CWM	☒	Fire Extinguisher Location
☐	Elevation	☐	Lockout/Tag Out	☐	Ear Plugs	☒	Safety Shoes/Boots	☐	Spill Kit Location
☐	Isolation	☐	Work Permit	☐	Ear Muffs	☐	Rubber Boots	☐	Severe weather shelter
☒	GFCI	☐	Dig Safe Permit	☒	Safety Glasses	☒	Gloves	☐	Evacuation Routes
☐	Assured Ground Program	☐	Contingency Plan	☐	Goggles	☐	Cooling Suits		
☐	Apply Anti-slip/skid Mat	☐	Critical Lift Plans	☐	Chemical Goggles	☐	Ice Vests		
		☐	Equip. Inspection Sheets	☐	Face Shield	☐	Radiant heat Suits		
				☐	Thermal Shield	☐	Fall Arrest		
				☐	Welding Mask	☐	PFD		
				☐	Cutting Glasses	☐	Electrical insulation		

Any Modification to Tasks (list)	Other tasks or activities that may affect my activity	Reasons for any changes indicated above

Environmental Compliance Considerations:

☐	Generation of Hazardous Waste*	☐	→Waste Identification & Manifesting - Marking, Placarding, Labeling
☒	Generation of Investigation Derived Waste*	☐	→Training & Licensing for Use of Radioactive Materials/Sources
☐	Treatment, Storage, or Disposal of Hazardous Waste*	☐	→ Containers: dated, labeled, closed, full, stored less than 90 days
☐	Contingency to prevent or contain hazardous materials or oil spills or discharges to drains, body of water, soil*	☐	→ Risk of explosion or catastrophic release due to chemical storage or processing involving reactivity, flammables, solvents or explosives
☐	Disturbing of Asbestos Containing Materials (ACM)*	☐	→Training & Licensing for Asbestos Remediation Activities
☐	Application of Pesticides or Herbicides*	☐	
☐	Work on Above or Under-ground Storage Tanks*	☐	
☐	Transportation, Storage or Disposal of Radioactive Material*	☐	
☐	Activities producing or generating Air Emissions (or fugitive "fence-line" emissions) requiring either monitoring and/or permit*	☐	
☐	Excavations, Drilling, Probing or other activities that could impact underground utilities, pipelines, sewer or treatment systems.	☐	
☐	Shipment of Hazardous Waste off-site* Shipment of Samples in accordance with DOT/IATA	☐	

* Indicates need for an environmental compliance plan.

COMPLIANCE PLAN FOR INVESTIGATION DERIVED WASTE: All IDW will remain on the facility property. As per the Decontamination Plan outlined in Section 6, all PPE will be bagged or drummed as per site requirements and appropriately disposed by the facility. Weston will not remove any contaminated material from the property.

ATTACHMENT H
TRAFFIC CONTROL PLAN

ATTACHMENT I
AUDIT FORMS

MANAGER'S FIELD SITE HEALTH AND SAFETY AUDIT FORM

PM name: _____ Date: _____

Client name: _____ W.O. No.: _____

Site location: _____ Site phone no.: _____

Inspection conducted by:

__ PM in person __ PM via phone (Contact Name: _____)

__ PM's designee (Designee's Name: _____)

1. Is the HASP available at the site? __yes __no Signed by all personnel? __yes __no
   (Have the cover page and site worker sign-off page faxed and attached to this form.)

2. What tasks are active? _____.

3. What special H&S considerations are necessary? (e.g., confined spaces, fall protection, construction safety, excavation evaluations, radiation, etc.) _____
   _____.

4A. List the name of the SHSC/FSO on Line (a) and any other employees working at the site on lines (b) through (i). Verify and check (✓) if field certifications are current:

Name	Weston or Sub?	Training	Medical	Fit Test
a.				
(For above, circle: SHSC or FSO)				
b.				
c.				
d.				
e.				
f.				
g.				
h.				
i.				

4B. For large projects, is documentation on-site for employee certifications? __yes __no __NA

5. Is emergency contact information available on-site? __yes __no
   (Have a copy faxed from the site and attached to this report.)

6. Describe the ambient temperatures during recent work shifts: _____.

7. Was the level of PPE used for each task today as required by the HASP? __yes __no

8A. What contaminant monitoring is conducted? _____.

8B. How are results documented? ___Logbook ___Forms ___other (describe): _____.
(Have the most recent results and calibration information faxed and attached to this form.)

9. What other monitoring is done? (e.g., heat stress, cold, noise, etc.) _____.

10. How are work zones marked and/or designated? _____.

11. Are personnel and equipment decon performed as required by the HASP? __yes __no

12. Are first aid and CPR services provided as required by the HASP? __yes __no

13. When were first aid kits, BBP kits, and fire extinguishers last inspected? _____.
(Have documentation faxed and attached to this form.)

14. Was site-specific hazard communication completed and properly documented?__yes ___no
(Have checklist in HASP Attachment D faxed and attached to this form.)

15. When was the last safety briefing conducted? _____. List topic(s) discussed:
_____.
(Have minutes/sign-up sheet faxed and attached to this form.)

16. Explain any negative findings below: _____

PM Signature/Date: _____

HEALTH AND SAFETY FIELD AUDIT

Legend X = Yes, O = No

SITE NAME:_____

WO #:_____

LOCATION:_____

INSPECTOR:_____

DATE:_____

CERTIFICATION OF PERSONNEL:

1._____All WESTON personnel on site are currently active on certification list?
2._____Site Safety Officer and Site Supervisor are qualified?

MEDICAL AND FIRST AID:

1._____First Aid Kits accessible and identified?
2._____Emergency eye/safety washes available?
3._____Daily First Aid logs up to date?
4._____First Aid Kits inspected weekly?
5._____At least two First Aid trained persons on site at all times when working?

SITE SAFETY/EMERGENCY PLANS:

1._____Safety plan posted on site and given to each person?
2._____Initial site safety plan meeting held and documented before work begins?
3._____Hazardous materials information available for all hazards?
4._____Designated, qualified site health and safety coordinator on site?
5._____Employees trained in toxicology/exposure risks?
6._____Emergency telephone numbers posted?
7._____Emergency routes designated?
8._____Emergency plan and signal reviewed with all persons?

TRAINING:

1._____Daily safety meetings documented?
2._____Question and answer time available to all site personnel?
3._____All employees instructed in hazardous materials handling practices?
4._____ New personnel to site receive: copy of safety plan_____, site orientation_____, Review of: LOP_____, DECON____, ZONES_____, Site specific safety and health hazards?____

HEALTH AND SAFETY FIELD AUDIT - Continued

Legend X = Yes, O = No

PERSONAL PROTECTION:

1._____All equipment meets ANSI/OSHA/EPA criteria?
2._____Levels of protection (LOP) established?
3._____Site control zones (Exclusion, CRZ, Support) clearly designated?
4._____All employees know their LOP scheme?
5._____OSHA respirator program in place?
6._____Employees fit tested for respirators?
_____ On site?
_____ Fit tests current?
7._____Defective equipment tagged out?
8._____Breathing air grade "D" certified?
9._____Sufficient quantities of equipment?
10.____Safety instrumentation maintained and calibrated?
_____ Maint. & Cal. logs up to date?

DECONTAMINATION:

1._____Decon system set up on site?
_____ Used?
_____ According to safety plan?
2._____Contamination reduction corridor clearly delineated within the CRZ?
3._____Appropriate waste recepticals available for all waste?
4._____Recepticals properly closed at end of day?
5._____All Decon liquids properly contained and disposed of?
6._____All wastes disposed of according to approved plan?
7._____All personnel received Decon training?
8._____All reusable personal protective gear deconned and disinfected at least daily?

FIRE PREVENTION/PROTECTION:

1._____Hot work permits required?
2._____Smoking restricted to designated area?
3._____Fire lanes established, clearly designated & maintained?
4._____Flammable/combustible liquid dispensing transfer systems grounded & bonded?
5._____Proper flammable materials storage?
6._____Fire alarm established, workers aware?
7._____Location and use of fire extinguisher known by all personnel?
8._____Fire extinguishers checked before each shift?
_____ Inspected monthly?
9._____Fire extinguisher appropriate for fire hazard potential?
10.____Combustible materials segregated from ignition sources?

HEALTH AND SAFETY FIELD AUDIT - Continued

Legend X = Yes, O = No

WALKING AND WORKING SURFACES:

1._____Accessways, stairs, ramps and ladders free of ice, mud, snow or debris?
2._____Ladders exceed max length?
3._____Ladders used in passageways, doors or driveways?
4._____Broken or damaged ladders tagged out?
5._____Metal ladders prohibited in electrical service?
6._____Safety feet on straight and extension ladders?
7._____Stairways, floor and wall openings guarded?
8._____Elevated work areas guardrailed or safety chained?
9._____Flotation devices worn when working on or over water?
10.____Toe boards on overhead work surfaces?
11.____Mobile offices/labs have fixed stairs and handrails?
12.____Work areas kept free of debris and equipment?

EXCAVATIONS, CONFINED SPACES, TUNNELS:

1._____Excavations sloped, shored or benched to prevent cave-ins?
2._____Shoring approved by engineer?
3._____Guardrails or fences placed around excavations near walkways or roads?
4._____Excavation locations lighted/or otherwise made visible at night?
5._____Utility check performed and documented before excavation or drilling?
6._____Ladders available in trenches more than 4 feet deep and at a minimum, 25' intervals along a fence?
7._____All excavated material, personnel, heavy equipment is at least 24" from the edge of all trenches?
8._____Confined space entry permit procedure in place and communicated to all?
9._____Employee training includes CSE hazards?
10.____Tunnels are adequately ventilated?
11.____There is proper lighting?
12.____Tunnel tested for: % O_2?
_____LEL, flammable gases, vapors?
_____TOX?
13.____Communication available inside to out?
14.____No flammables or combustibles in tunnel?
15.____CSE procedures used for Tunnels?
16.____CSE procedure checklist:
_____ Safety watch?
_____ Safety watch protected same as enterers?
_____ Safety line?
_____ Appropriate harness?
_____ Continuous monitoring for % O_2, % LEL & TOX?

HEALTH AND SAFETY FIELD AUDIT - Continued

Legend X = Yes, O = No

EXCAVATIONS, CONFINED SPACES, TUNNELS (continued):

_____ Level B or constant ventilation and monitoring?
_____ Instruments calibrated?
_____ Maintain and inspect log for all equipment?

17.____Confined space isolated from electrical/mechanical activation by following lock out/tag out proceedings?
_____ Confined space isolated from any raw materials/chemical lines by disconnecting or blanking these lines?

MOTOR VEHICLES/HEAVY EQUIPMENT:

1._____Inspected before each use?
2._____Operators licensed for equipment used?
3._____Unsafe equipment tagged out and reported?
4._____All safety appliances/guards in place?
5._____Shut down for fueling?
6._____Equipped with back-up alarms or spotter used if 360° visibility restricted?
7._____Loads are secure before transport?
8._____Roads and structures inspected for load capacity per vehicle weights?
9._____Riders prohibited on heavy equipment?

SLINGS AND CHAINS:

1._____ Slings, chains and rigging rated for intended use and inspected per OSHA. Documentation of inspection in daily log?
2._____Damaged slings, chains or rigging tagged out and reported?
3._____Employees are instructed and keep clear of suspended loads?

ELECTRICAL:

1._____ Warning signs indicate the presence and location of high voltage equipment, 250 V or greater present and location?
2._____Electrical equipment and wiring properly guarded?
3._____Electrical lines, extension cords and cables guarded and properly maintained?
4._____Extension cords kept dry out of puddles and rain?
5._____Damaged equipment tagged out?
6._____Underground electrical lines located and indicated?
7._____ Overhead electrical lines de-energized or elevated work platforms, work areas, booms or ladders erected so no contact can occur with electrical lines?
8._____ A positive electrical lock-out system is used whenever work is done on or in electric equipment or electrically activated equipment?

HEALTH AND SAFETY FIELD AUDIT - Continued

Legend X = Yes, O = No

HAND AND POWER TOOLS:

1._____Guards and safety devices in place and used?
2._____Inspected before each use?
3._____Tagged out if defective?
4._____Eye protection areas identified and protection worn?
5._____Non sparking tools available?

WELDING AND CUTTING:

1._____Fire extinguishers present at all welding and cutting operations?
2._____Confined spaces, tanks, pipelines tested before welding or cutting?
3._____Hot work permitting system in use?
4._____Proper helmets and shields (including proper tint for UV protection) used?
5._____Properly grounded?
6._____Fuel gas and O_2 gas cylinders stored at least 20' apart?
_____ Stored upright and secured?
7._____Only trained welders permitted?

COMPRESSED GAS CYLINDERS/PRESSURIZED LINES:

1._____Breathing air cylinders charged only to prescribed pressure?
2._____No other gas system can be mistaken for breathing air?
_____ Fittings prohibit cross connection?
3._____Cylinders segregated appropriately in controlled, protected but well ventilated areas?
4._____Smoking prohibited in storage areas?
5._____Cylinders stored upright and secured?
6._____Cylinder caps in place when stored (not in use) or when cylinders moved?
7._____Fuel gas and O_2 minimum 20' apart when stored?
8._____Pressurized air or waterlines are securely connected?
9._____All site personnel know never to step across a pressurized line?
10.____Gas or other hazardous lines are labelled appropriately?

MISCELLANEOUS:

1._____ Tools and other equipment (portable) are stored away from walkways, roads or driveways where they cannot fall on or be fallen over by site personnel?
2._____Overhead hazards are noted, communicated to all and labeled as needed?
3._____Hard hat, eye hearing and protection areas are defined and signs in place?
4._____Hard hats, eye and head protection used where appropriate?
5._____Signs or labels are in place or appropriate training received?

HEALTH AND SAFETY FIELD AUDIT - Continued

Legend X = Yes, O = No

6._____Copies of contracts with client and sub-contractors are on-site, WESTON's role regarding site health and safety responsibilities clear in these and in the minds of the site manager(s)?

7._____Sub-contractors have received approved copies of their safety plan or have signified their intent to conform with Weston's safety plan?

8._____Site managers understand their responsibilities for sub-contractors' conformance with all OSHA and other health and safety requirements?

9._____Site managers know what to do in the event of an OSHA inspection?

COMMENTS: